ESTABLISHED IN 1872

PAPER TRADE JOURNAL

PAPER

SIXTY-FOURTH YEAR

Established Feb. 17, 1899
Consolidated Nov. 16, 1899
with PAPER TRADE JOURNAL.

Vol. CII, No. 16 Thursday, April 16, 1936

Established Sept. 21, 1910
Consolidated Feb. 19, 1925
with PAPER TRADE JOURNAL.

Northern Paper Mills Directors Re-Elected

Plan Advanced by Paul V. Cary As Trustee for the Patten Paper Co., Appleton, Wis., Rejected by Stockholders At Annual Meeting—Report of Officers Shows Marked Improvement In Conditions During Last Few Months

[FROM OUR REGULAR CORRESPONDENT]

APPLETON, Wis., April 13, 1936—Another chapter in the contest for control of the Northern Paper Mills, Green Bay, Wis., was written by the stockholders at their annual meeting April 7, when they re-elected the incumbent board of directors and rejected the plan advanced by Paul V. Cary as trustee for the Patten Paper Company, Ltd., Appleton, Wis., to sell the controlling interest to George C. Newton of Iron Mountain, Mich.

Directors re-elected are: W. P. Wagner and Earle Murray, Green Bay, and G. E. Buchanan, A. F. Tuttle, H. W. Tuttrup, F. J. Harwood, Roy H. Purdy and A. B. Weissenborn, of Appleton. A. B. Hansen, who succeeded Judson G. Rosebush as general manager, was elected a director in his place. William E. Buchanan of the Appleton Wire Works, Appleton, was elected to the board to succeed R. B. Goodman, deceased.

The directors elected as officers: W. P. Wagner, president; Earle Murray, vice-president; G. E. Buchanan, secretary; H. W. Tuttrup, treasurer and assistant to the president, and A. B. Hansen, general manager.

Because of the controversy, the attendance of sixty stockholders was the largest in years, and 69,245 shares were voted in person or by proxy out of 79,515 shares outstanding. A motion to make the election of directors unanimous was opposed by R. B. Graves, Wisconsin Rapids, Wis., counsel for Mr. Rosebush, voting 17,965 shares, and by E. M. Duquaine, Green Bay, Wis., counsel for Mr. Cary, voting five shares.

Mr. Graves made a plea to the stockholders to permit the Patten interests to acquire a block of stock in dispute so the Cary plan to sell the controlling interest to Mr. Newton might proceed, pointing out that the advantageous price thus obtained would permit the Patten company to reorganize without loss to stockholders. The Northern stock held by the Patten company, he explained, is its biggest asset next to its buildings, and the Northern is one of Patten's principal creditors. Mr. Graves moved for adoption of a resolution by the stockholders to turn over to Mr. Cary as Patten trustee the stock taken over by the Northern directors to apply against loans by Mr. Rosebush for which the shares were collateral. The motion did not prevail.

Shortly before the meeting was called, the directors were served with an injunctional order signed by a court commissioner of Outagamie County, directing postponement of the meeting until further time could be granted for completing the Cary-Newton contract. An appeal immediately was taken to Judge Edgar V. Werner, of the Outagamie County circuit court, who agreed to stay the order until the matter comes on for hearing, so the meeting could proceed as scheduled.

Reports presented to the stockholders by President Wagner, Treasurer Tuttrup and General Manager Hansen showed a marked improvement in conditions during the last few months. Unprofitable business has been dispensed with, all obligations have been met, and the company's financial position has been strengthened considerably.

Two actions have been brought in Judge Werner's court against the Northern Paper Mills and its directors. One is by Mrs. Judson G. Rosebush, in which she claims the voting rights on 7,000 shares of Northern stock owned by her and pledged by Mr. Rosebush as collateral for a note at the First National Bank, Appleton, Wis. Directors of the company acquired the note from the bank and with it the collateral and their attorneys content it was understood the voting rights accompany the block of stock when it was pledged. The court is asked to determine the voting rights.

The other action was brought by Robert N. Filbey, Milwaukee, holder of seventeen shares of Northern stock, who sought to prevent the directors from interfering in the sale of stock in the Northern owned by the Patten company and others. He alleges in his complaint the directors are not acting in the interests of the corporation. Dismissal of the two actions was asked by attorneys for the Northern. Judge Werner has taken the matters under advisement.

Paper Chemistry Institute Additions

Stone work on the $100,000 additions to the Institute of Paper Chemistry, Appleton, Wis., has been completed and they were put under temporary roof last week. Work is progressing at a speed which almost assures completion in time for dedication and public inspection June 8, when the Institute and Lawrence College hold their joint commencement exercises.

The new quarters will house additional storerooms,

(Continued on page 29)

Fight for Price Bros. Control Continues

Aluminum Interests, Through Newly Formed Company, Entitled Pacona Ltd., Submit to Bondholders' Offer of Twenty Million Dollars for Assets of Company—The Preferred Stockholders, However, May Block The Proposal

[FROM OUR REGULAR CORRESPONDENT]

MONTREAL, Que., April 13, 1936—According to the newspapers, another battle is in prospect for the control of Price Bros. & Co., now in receivership. Aluminum interests, which through a new company (Pacona Ltd.), submitted an offer to the bondholders of $20,000,000 for the assets of the company, are said not to be disposed to permit the more recent offer made to the trustee-in-bankruptcy on behalf of the company's shareholders to go through without opposition.

It is reported that Pacona Ltd., has purchased from the bondholders' protective committee a substantial block of the Price Bros. bonds in an effort to obtain voting control of the mortgage-holders and thus facilitate the acquisition of the company in accordance with the terms of its offer of par and accrued interest in cash for the outstanding bonds. In some quarters it is stated that the company now possesses virtually all the bonds.

No confirmation of the sale of any of the Price Bros. bonds to Pacona Ltd., by the protective committee is obtainable, but legal opinion has been expressed to the effect that, by the terms of the deposit agreement under which the bonds were deposited with the committee, the latter is vested with authority to transact a direct sale provided the face value of the bonds, plus accrued interest, were the cash consideration therefor. The opinion is expressed by an individual close to the Price Bros. situation that the bulk of the Price bondholders would doubtless consider the Pacona offer an attractive one—approximately $124 for a bond that sold below 30 a year or so ago. On the other hand, there is a school of opinion that, under existing interest rate conditions, the shareholders' offer to maintain the position of the bonds and pay back interest in cash, might be considered the more attractive proposition.

There is considerable conjecture as to how the Pacona offer could be made effective, even if the company obtained voting control of the bonds, with the strong opposition that would undoubtedly come from both classes of the company's shareholders, who receive no consideration in the Pacona plan. The opinion is expressed that the plan could be consummated only by winding up the company and selling the assets.

With the necessary majority of the bonds outstanding, winding up proceedings could, of course, be instituted by the Aluminum interests, but in view of the position of the company and the much improved outlook for the newsprint industry, there appears to be considerable doubt as to whether a winding-up order could be obtained.

In conversation with *The Financial Times* a member of the preferred shareholders' committee expressed little concern on the possibility that Pacona might obtain voting control of the bonds. Such a development, he said, would only put Pacona in the same position as the bondholders' committee has previously occupied, and, he pointed out, preferred shareholders blocked a previous offer which had been approved by the latter.

Another view is that the Pacona company may take the matter to the courts or that they may make an amended offer for consideration at the shareholders' meeting called for April 29.

St. Lawrence Paper Mills

Shareholders of St. Lawrence Paper Mills Co., Ltd., at a special meeting here, approved a resolution to effect a reduction in the fixed assets of the company from $26,346,825 to $14,740,275, by cancelling $11,606,550 lost or unrepresented by available assets.

A corresponding write-off has also been made in the value of the common stock, as shown in the balance sheet, from $12,221,225 to $514,675.

In commenting on the change, Mr. Cameron stated that it would result in substantial savings in taxes. One of the shareholders commented on the indication of an improvement in the newsprint industry, as shown by the reduction in net loss in 1935 to $30,000 as against $366,000 in the previous year.

Bathurst Co. Had Better Year

The annual report of the Bathurst Power and Paper Company, Ltd., shows that gross income for the year ended December 31 last, was almost double that of the previous year and net earnings equal to 23½ cents a share on the outstanding 400,000 shares of class "A" stock, as against a small deficit for the year 1934. This is the first net profit shown by the company since 1930. Total gross profits and miscellaneous income amounted to $472,051, as compared with $244,575 in 1934.

In submitting the report, Brig. General J. B. White, president of the company, says in part: "The year 1935 witnessed the continued progress of your company in the kraft liner business, with a substantial increase in sales above 1934. The volume of sulphite sales also improved over the preceding year but the margin of profit was unsatisfactory.

"Sales of newsprint were slightly less than during the preceding year and resulted in small profit.

"Towards the end of the year a program of alterations and additions to the kraft mill and Fourdrinier machine was commenced, with the object of increasing the productive capacity of kraft liner and further improvements have been made during the year and are in contemplation to increase efficiency and reduce rates. Plans have also been approved to recondition an idle cylinder machine for the manufacture of folding box boards. It is expected that this machine will be brought into operation approximately June 1, 1936."

Brompton Pulp and Paper Co.

At the annual meeting of shareholders of Brompton Pulp and Paper Company, Ltd., held here, D. J. Salls and S. R. Newton were elected to the board of directors.

Mr. Salls is a director of Sherbrooke Trust Company; Webster Motors Ltd. and Manganese Steel Castings Ltd.; is a resident of the city of Sherbrooke and is vice-president of the Eastern Townships Associated Boards of Trade and the Sherbrooke Unit of Protestant Colonization for the Eastern Townships. Mr. Newton is vice-president of the Canadian Ingersoll-Rand Company, Newton Construction Company and Forkesville Coal Company.

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Outlook for Upper Lakes Pulp & Paper Co.

Following Court Approval of Great Lakes Reorganization and Withdrawal of Opposition, Bonds of Company Rise—Orders for Newsprint From U. S. Publishers Expected to Allow Production of 90,000 Tons Annually

[FROM OUR REGULAR CORRESPONDENT]

TORONTO, Ont., April 13, 1936—The committee for bondholders of Great Lakes Paper Company thinks it advisable that provision be made in the trust deed for new bonds to allow the trustee to consent to postponement of one or both of 1936 interest payments. In a letter mailed to bondholders this week, it is stated that delays in the reorganization of the company made it impossible to pay interest due one new bonds on April 1, 1936. There will also be a payment due October 1, 1936, which would be affected by the proposed provision. The committee feels the company should be able to earn the first year's bond interest with but little, if anything, available for depreciation. The proposal would allow the trustee to consent to postponement of 1936 interest payments for a period up to three years. Holders of a majority of bonds, however, would have the right to cancel any such extension. The letter states the provision would enable the new company to avoid depletion of liquid assets without having to call a meeting of bondholders to consent to postponement. Court approval to the proposed provision in the trust deed may be sought.

Reorganization of Great Lakes Paper Company has received court approval and opposition having been withdrawn, the company's bonds have risen to 60. The current price represents the value being placed on securities in the new company, Upper Lakes Pulp and Paper Company.

Orders for newsprint have been received from various United States publishers and are expected to allow the company a production of about 90,000 tons annually. At $40 a ton for newsprint it has been estimated that net earnings before depreciation and bond interest should be well above $400,000 and might approach $500,000. Hence, it is believed that even under present price conditions the company can earn and pay interest on the new bonds.

One of the features of the Great Lakes deal as revised is that no dividends can be paid until newsprint reaches $45.30 a ton. The class A and B shares rank equally for a dividend of $2 a share annually. No payments are likely for some time, however, because even the price of $45.30 might not produce sufficient income for the purpose. However, there is an eventual possibility that the price of newsprint will improve sufficiently to bring dividends into prospects. It is pointed out that the company is one of the lowest cost inland producers of newsprint. It keeps costs low under the new deal because deliveries are to be made in the Great Lakes area where economical water transport can be used in summer and where the rail haul is short in winter.

A $1,000 bond of Great Lakes Paper Company represents $600 of new bonds on which annual income is to be $30. In addition there is a gamble on recovery of the newsprint industry in the form of Class A and common shares. The value and income from this portion of the distribution to investors will depend largely upon the price of newsprint over the next five or ten years.

Offer for Abitibi Under Discussion

From reliable sources it was learned this week that an interesting offer, promising new cash to the company, has been made by a group for the assets of the Abitibi Power and Paper Company, for long in receivership and under administration by a receiver and manager. It was further learned that definite conversations on the basis of the new offer have proceeded between representatives of the offerers and of the Bondholders' Protective Committee. It was indicated, however, that no conclusions were reached, and it was hinted that the plan submitted may not find acceptance as it would involve turning assets over to interests hitherto not connected with the company or the industry in any way.

The proposal is said to be that the present $48,000,000 of the first mortgage bonds would be replaced by a new first mortgage issue of half that mount, income debentures to be issued to cover arrears of interest now outstanding, and the balance of capital to be made up to present holders by a new issue of preferred shares. Presumably the offer also contains provision for the group making the offer to provide working capital in exchange for a new common stock issue, but details of that angle were lacking in the information so far at hand.

New Building for Don Paper

Don Valley Paper Company, Ltd., Toronto, are spending about $30,000 on the erection of a new building and on certain new equipment necessary to the rebuilding of their paper machines, etc. The building, which is in course of erection, will be completed in two months' time and will be used partly as an additional finishing room and partly for storage purposes. The company states that the additional space and improvements may increase production by about 10 per cent. They are aiming rather in the direction of having better facilities for finishing their stock, the possible development of new lines and improvement of their product generally.

Coast Mill Interests Germans

According to word from Vancouver received this week, Frank L. Buckley, managing director of Canadian American Pulp and Paper Company, which plans construction of a pulp and paper mill at Prince Rupert, is negotiating with German interests for additional financial sponsorship. Up till now the principal backing for the company has come from San Francisco.

It is expected that one or two eastern Canadians will be added to the directorate and possibly an English manufacturer.

Pulpwood Fire Causes Loss

Fire in a 6,000-cord pile of pulpwood at the Abitibi Power and Paper Company's mill at Easpanola was still burning strongly this week and firemen anticipated that two more days would elapse before the blaze is extinguished. Firemen worked in three shifts of sixty men, each pouring 25,000 gallons of water per hour on the huge pile of rotting wood exposed to the weather since the mill was closed in December, 1929.

The fire was believed to have been caused by spontaneous combustion.

Paper Business Uniformly Good in Chicago

Demand for Various Grades of Paper Well Maintained—Book Paper Conditions Reported Satisfactory—Cover Papers Comparatively Strong—Bond Papers In Better Request—Kraft Papers Continue Steady to Firm

[FROM OUR REGULAR CORRESPONDENT]

CHICAGO, Ill., April 13, 1936—Despite the handicaps of an abbreviated week due to the Easter holidays and inclement weather, the Chicago paper business is taking full advantage of a good Easter trade and of orders for Spring and summer business which are successfully bolstering demand. Demand in virtually all grades has continued uniformly good. Book paper conditions are reported satisfactory, despite some report of protests against changes made in the lower grades. Container products have responded to the strengthening influence reported last week and the undertone in this market is good despite setbacks due to weather, floods, etc., Krafts continued firm with prospects of renewing an advance begun months ago and slightly checked earlier in the season. Covers were comparatively strong, while representatives of newsprint concerns reported an evidence of a stronger tone based on Canadian and United States newsprint reports. The bond market was little changed, with demand running consistently better. Waste papers were reported dull, with little change in the price structure.

New Grade of Sandpaper

An interesting item on the manufacture of a new grade of standpaper by Armour & Co. is contained in a recent issue of the Central Manufacturing District magazine. The Armour Sand Paper Works is now turning out the new Electro-Coated abrasives and is carrying on a sandpaper business inaugurated forty years ago to take up the glue by-product. The Chinese are credited as being at least the near originators of sandpaper, attaching powdered sea shells to parchment with natural gum. Sand and glass were glued to paper on a commercial scale in England about 250 years ago and in 1825 the first factory was established in this country to make glass-coated "sandpaper." A common sand is not used as an abrasive at present and no genuine "sand" paper has been made for many years. Both natural and synthetic grits are used. The common abrasives are flint, garnet and emery. Paper continues to be a common attribute in the manufacture of the product, though cloth is also sometimes used.

News of the Industry

Included among the list of exhibitors which have arranged to appear at the annual meeting of the Illinois Booksellers and Stationers Association at Belleville, Ill., are a number of paper firms, including the Eaton Paper Company; the Southworth Paper Company; Graham Paper Company; Associated Stationers Supply Company, and other representatives of allied industries. The annual sessions will be held May 5 and 6 with the exhibitors given a special space within the convention hotel to display their wares.

It took about 207 loose leaf pages for the Swigart Paper Company to list revised prices on book and other lines. The recent mailing to the local trade included both catalog and price list and a reference sheet on Strathmore papers carried in stock and covering bonds, book papers, cabinet stationery, cover paper, thin papers and writing papers. An interesting folder on Marine Bond, a 50 per cent rag content paper, was included in the mailing, along with a swatch sheet covering four grades of white and two each of canary, buff, russet, goldenrod, gray, blue, green, and pink.

Of considerable interest to certain lines is the news that the Chicago Corporation, investment trust, has purchased a $1,250,000 interest in the Dixie-Vortex Company and that the latter is contemplating application to list its shares on the New York Stock Exchange. Dixie-Vortex was recently formed as a merger of the Vortex Cup Company of Chicago and the Individual Drinking Cup Company. The contract is subject to the stipulation that the merger shall become effective and that application for listing shall be made to the New York Stock Exchange.

From the Chicago headquarters of the Container Corporation comes the news that F. B. Atwood of that organization has been accepted as an approved paper and pulp mill testing chemist by the joint committee on Approved Pulp and Testing Chemists for the Paper Industry.

It begins to look as though the American Pulp and Paper Mill Superintendents Association was going to have a good representation from Chicago when the exhibits for the annual meeting are put on display June 27 to 29. Joseph T. Ryerson & Sons is the latest exhibitor to announce the intention of displaying products of interest to the paper industry. Meanwhile, Tom Ireland, veteran sales executive, who recently returned to the Chicago headquarters of the Crane Company, has given out a special invitation to the paper industry to visit the Crane plant while en route to the Grand Rapids sessions. Mr. Ireland will also be present at the Crane exhibits.

A number of Chicago paper houses received a very much belated Christmas gift this week when they received payment for goods sold to the now defunct Royal Printing Company in 1924 and 1925. Shortly after the sales were made the company went into bankruptcy and the accounts were laid away with much regret. Recently, however, J. C. Happening has announced a desire to pay up these obligations and amounts running to nearly $2,000 were distributed locally.

While the Cook County Circuit Court has decided that printers are not affected by the 3 per cent Retailers Occupation Tax because their product is a "service," there yet remains the decision of the Supreme Court of the State expected about June 1 and of real interest not only to members of the local Graphic Arts Federation but to paper jobbers as well. The paper industry is interested because if the printers are deemed not liable for the tax by the higher court they will then become the ultimate consumers of the paper and the jobbers will be classed as "retail." This possible perplexity is already being taken care of in a measure as the paper jobbers have already reached a decision that the tax shall be added as a separate amount to merchandise sold to printers and subject to the tax. Otherwise, the Illinois paper industry has received further favorable news in rulings from the State Department of Finance which clarify the situation with respect to interstate shipments and which should help materially in protecting Illinois merchants from the encroachments of tax free shippers doing business outside of the State.

Demand for Paper Increases In Philadelphia

Sales Volume of Practically All Standard Grades of Paper Exceeds Record for Corresponding Period of Preceding Year—Paper Trade Association and Paper and Cordage Association Announce Plans for Future Meetings

[FROM OUR REGULAR CORRESPONDENT]

PHILADELPHIA, April 13, 1936—With Easter buying in full swing at the close of this past week, the volume of sales in all lines of the paper trade—especially wrapping paper, paper boxes, etc.—showed considerable increase over this period a year ago.

Association Activities

The regular quarterly meeting of the Board of Governors of the Paper Trade Association of Philadelphia was held on Wednesday, April 8, at the Down Town Club. President Norbert A. Considine presided. However, on account of limitation of time, it was decided to adjourn until Monday, April 13, at which time the meeting was again in session.

An informal luncheon meeting of the Fine Paper Division of the Paper Trade Association was held on April 9, at 12:30 in the Down Town Club. Today, Monday, this same division held a luncheon meeting at the Adelphia Hotel. Ormand Freile, vice-president of the division. presided.

Over the signature of Jack Shinners, secretary of the Philadelphia Paper and Cordage Association, the following letter accompanied by a blank return post-card was sent this week to the members of the association.

"The regular meeting of the Philadelphia Paper and Cordage Association will be held on Friday, April 17, at the Hotel Adelphia. We are exceedingly anxious to pep up these meetings and find that the main reason why they drag on is because we cannot get started promptly at 12:30. The weather is getting balmy and none of us like to spend too much time indoors, so—let's make an effort for this meeting to get there early, so that we can start promptly at 12:30.

"Those of you who were unable to attend the Shad Dinner know, by this time, that you missed a bang-up party. Plans are under way for the annual outing and we would certainly like to have you attend this meeting and give us suggestions. Mr. Lay is doing a marvelous job as chairman of the Entertainment Committee, and deserves your whole-hearted support.

"A number of people who attended the Shad Dinner expressed the thought that they would be able to attend the monthly meeting oftener, if it could be arranged to be held in the evening. On the enclosed card, we would appreciate your advising us as to what you think, so that we may shape our platform to conform to the ideas of the greatest number."

News of the Industry

Announcement has been made that Paper Merchants, Inc., 140 North Sixth street, are now agents for American Writing Paper Company, handling Trojan Ledger and Trojan Bond. These are American Writing Paper Company's 25 per cent rag grade.

Contrary to earlier expectations, Container Corporation of America will not do so well in the current quarter as last year, Walter P. Paepecke, president, announced. From present indications, net profit for the three months, ending March 31, of around $150,000, after depreciation, interest and Federal taxes, equal to about 22 cents a share on 653,540 shares of $20, par capital stock outstanding, will be shown.

Safety Conference Planned

[FROM OUR REGULAR CORRESPONDENT]

APPLETON, Wis., April 6, 1936—Plans are taking shape for the annual Fox River Valley and Lake Shore Safety Conference, to be held at Manitowoc, Wis., Thursday, May 21. The morning sessions will be given over to a discussion of public safety, and the afternoon to industrial safety. There will be ten sectional meetings, one of which will be devoted to the pulp and paper industry. Speakers will describe new methods of mill safety, and there will be a round-table discussion. A safety parade will be a feature. An attendance of more than 1,500 is expected.

"Thwing Paper Tester"

The Thwing-Albert Instrument Company, 3339 Lancaster avenue, Philadelphia, Pa., has just published the first issue of the *Thwing Paper Tester*, a new house organ which will be issued every two months by the company. In this first issue the technique of checking on basis weight of paper is fully discussed. Subsequent issues will deal with additional topics of interest to the manufacturers, converters, buyers and users of paper and paper products. These articles will be written by outstanding authorities in the paper industry and written so that the average non-technical reader can understand them.

Tannite Deckle Straps

A bulletin describing Tannite deckle straps and explaining the advantages of Tannite rubber and the true-centered core construction has just been published by Stowe-Woodward, Inc., of Newton Upper Falls, Mass. In addition to this description, the bulletin explains why many mills that have been running without deckles are putting them on their machines. The bulletin also contains useful information on storing and ordering deckle straps. A copy may be obtained by writing the manufacturer.

Label Manufacturers to Meet

The Label Manufacturers National Association will hold its semi-annual meeting at the Greenbrier Hotel, White Sulphur Springs, West Virginia, on May 11, 1936, according to an announcement by Charles R. Cosby, executive secretary of the association. The special topic of the meeting will be the new standards of style and accuracy as applied to the modern definitions of correct labeling.

Central Paper Co. Moves New York Office

The Central Paper Company, Inc., Muskegon, Mich., announces the removal of its New York sales office to the Graybar Building, Room 925, 420 Lexington avenue. The new telephone number is Mohawk 4-0085.

Louis T. Stevenson Moves

Louis T. Stevenson, manufacturers' agent, announces his removal April 10 to the Lincoln Building, 60 East 42nd street, New York City.

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Beat your customer to it! Before he complains about opacity variations, get a B & L Opacimeter.

This instrument, designed expressly for the paper industry, can assist you to produce paper of the uniform opacity that consumers demand. With it you can accurately measure paper opacity in terms of contrast ratio and printing opacity.

Checks accurately with the Bureau of Standards Visual Instrument and one set of readings will give you far more accurate results than the visual method. The accuracy remains the same regardless of the degree of opacity. Accomodates samples of any size, shape or color. Dark room facilities are not necessary.

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Obituary

Robert D. H. Luke

MECHANICSVILLE, N. Y., April 13, 1936—Robert Dixon Hopkins Luke, aged 32, son of Thomas Luke, president of the West Virginia Pulp and Paper Company, died here on April 7.

Mr. Luke was taken suddenly ill more than a week ago, his physicians diagnosing his illness as acute nephritis and was removed to the Troy City Hospital. Hope for his recovery was justified by a favorable change in his condition following an operation to relieve an acute kidney condition.

Mr. Luke's parents, who were visiting in Havana were summoned to the hospital, arriving Thursday by airplane by way of Miami, Fla.

Mr. Luke, or Bob, as he was affectionately known in this city, was born in Covington, Va., July 17, 1903. The family resided in this city between 1907-1909, later moving to Tarrytown. The young man attended Lawrenceville School, New Jersey, and was a member of the 1920 class.

In autumn, 1920, he returned to this city to take up a thorough training in papermaking under the guidance of his uncle, Thomas H. Stirling, resident mill manager. His progress was rapid and for several years he was in charge of one of the machine rooms in the local West Virginia plant.

Recently, Mr. Luke was notified of his appointment as superintendent of one of the company's large mills in the South and before his illness he had virtually completed arrangements to depart from this city.

In May, 1927, he married Miss Helen M. Corrigan, this city, to whom were born three children, Helen, Rosemary and Janet.

Brothers and sisters surviving are: Thomas Luke, Jr., Los Angeles, Cal.; Donald K. Luke, Irvington, N. Y.; Victor Stirling Luke, this city; Mrs. H. Freeman Matthews, wife of the secretary to the United States Embassy, Havana, Cuba; the Misses Janet and Polly Luke, Tarrytown, and Mrs. Parker Wilston, Irvington.

Michael Steindler

Michael Steindler, vice-president of the Inlander-Steindler Paper Company, Inc., of 11-13 North Green street, Chicago, died at the Michael Reese Hospital on Tuesday, March 31, after an illness of approximately two months.

Mr. Steindler, who was sixty-one years of age, had been identified with the company during his entire adult life, his association covering a period in excess of forty years.

He was very well-known throughout the paper distributing trade and had established a wide-spread acquaintance throughout the entire industry.

Aside from his activities in the paper business, Mr. Steindler devoted a great deal of his time to church and charitable activities in and around Chicago.

He is survived by his widow, Mrs. Nettie Steindler; his brother, Sigmund Steindler, who is president of the Steindler Paper Company, of Muskegon, Mich.; his brother, Albert Steindler, who is treasurer of this company and actively engaged in its operation; and his sister, Mrs. Dan Meyer.

Wants To Establish Mill at Garwood

GARWOOD, N. J., April 13, 1936—The Sonoco Products Company, manufacturers of spools and other paper products, used by textile industries, at its plant in the former Aeolian Building, plans to establish a paper mill on the site of its present converting plant, providing it is permitted sufficient sewage disposal through the Garwood spur of the Rahway Valley Joint trunk sewer. Announcement was made at the meeting of the Borough Council last night when the concern requested permission to dispose of 500,000 gallons of waste water each operating day, with a possible maximum disposal of 750,000 gallons.

The request was referred to Fire Commissioner Louis Fontenelli, Garwood's representative on the Rahway Valley Joint Meeting, to take up with the other members of the Joint Meeting. Before Sonoco made its formal request to the council, according to Fontenelli, it had indicated that it would desire to dispose of more than 1,000,000 gallons a day. That, the Joint Meeting felt, was excessive. It is understood, however, that the present request will in all probability be approved. The waste will be so treated that little or no solids will be disposed of.

Court Rules Thomassen Patent Invalid

[FROM OUR REGULAR CORRESPONDENT]

DAYTON, Ohio, April 13, 1936—The United States Circuit Court of Appeals reversed a decision of the United States District Court (Dayton) last week, holding that the Thomassen patent owned by the Cenrifugal Engineering and Patents Corporation, Jersey City, N. J., is invalid.

The patent covers a process for freeing paper pulp of impurities. The patent covers a functional process not patentable in the United States, according to the finding of the United States Appellate Court.

Federal Judge Robert R. Nevin of this city in a suit filed by the Centrifugal Company against the Black-Clawson Company, Hamilton, manufacturers of paper-making machinery, enjoined further infringement, and ordered Black-Clawson Company to account for profits and damages.

The Appellate Court, ruling on an appeal by the Black-Clawson, which the Centrifugal Company charged with contributory infringement through the manufacture of the Miami Centrap machine, remands the case to the United States District court with instructions to dismiss the suit.

Spaugh Paper Co. Opens at Highpoint, N. C.

HIGHPOINT, N. C., April 13, 1936—Optimism as to the future of southern industry was expressed last week by W. I. Spaugh, president of the Spaugh Paper Company, in officially announcing the opening of his new firm.

Mr. Spaugh declared that modern facilities have been installed in order to take care of the demands in their field of work and added that many national connections have already been made by the firm. The company will specialize in paper and twine items for the industrial trade, with particular attention to upholstery supplies for the furniture industry.

Mr. Spaugh has been associated in the past with the Gray and Creech Company of Winston-Salem, with the old Parker Paper and Twine Company of this city, and with the Parker Paper Company, of which he was vice-president until he organized his new company. Associated with him are R. H. Todd, vice-president, and J. W. White, secretary and treasurer, the latter having been connected with the Parker Paper and Twine Company and the Parker Company for a total of 13 years.

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PM-35

Production Ratio Report

These statistics are based upon paper production reports to the American Paper and Pulp Association.

COMPARATIVE MONTHLY SUMMARIES

Month	1936	1935	1934
January	76.1%	65.8%	.....
February	78.0%	70.0%	.....
March	.....	70.5%	.....
April	.....	70.0%	.....
May	.....	69.4%	.....
June	.....	72.3%	.....
July (b)	.....	67.8%	.....
August	.....	70.9%	.....
September (c)	.....	75.0%	59.4%
October	.....	75.6%	64.7%
November	.....	75.3%	61.7%
December (a)	.....	74.3%	62.1%
Year	.....	71.2%	.....

COMPARATIVE WEEKLY SUMMARIES

CURRENT WEEKS, 1936		CORRESPONDING WEEKS, 1935	
*March 7	79.6%	March 9	69.6%
*March 14	78.7%	March 16	69.8%
*March 21	71.1%	March 23	70.8%
*March 28	75.5%	March 30	71.6%
*April 4	81.2%	April 6	70.8%

The following statistics show the number of mills reporting by ratio groups:

	Number of Mills Reporting, Current Weeks				
Ratio Limits	March 7, 1936	March 14, 1936	March 21, 1936	March 28, 1936	April 4, 1936
0% to 50%	72	84	142	118	51
51% to 100%	261	252	195	202	174
Total Mills Reporting	333	336	337	320	225

* Subject to revision until all reports are received.
These data exclude (a)—Christmas Day, (b)—Fourth of July, (c)—Labor Day.

Paperboard Operating Ratios

According to reports from the National Paperboard Association, per cents of operation, based on "Inch-Hours," were as follows:

1934	1935	1935	1935	1936
Sept. ... 62%	Jan. .. 61%	May .. 61%	Sept. . 69%	Jan. .. 61%
Oct. ... 63%	Feb. .. 67%	June . 65%	Oct. .. 76%	Feb. .. 67%
Nov. ... 56%	Mar. . 67%	July .. 59%	Nov. . 70%	
Dec. (a) 53%	Apr. .. 61%	Aug. . 65%	Dec. .. 60%	

Week ending March 7, 1936—68%
Week ending March 14, 1936—67%
Week ending March 21, 1936—65%
Week ending March 28, 1936—65%
Week ending April 4, 1936—70%

News of the Boston Paper Industry

[FROM OUR REGULAR CORRESPONDENT]

BOSTON, Mass., April 13, 1936—John Carter & Co., Inc., have had a teletype installed in their office, as most of the paper mills they do business with already have these instruments.

Willard H. Loud, president, of Stimpson & Co., has the sympathy of all in the passing of his father, Willard A. Loud, who dropped dead at his home, Waban, Mass., on Friday. Mr. Loud, who was 80 years old, was an expert pressman in the color department of the Rockwell & Churchill Press, this city, with which concern he had been for 47 years. Two sons and one daughter are living; Mr. Loud, of Stimpson & Co.; George D. Loud, of Boston; and Mrs. Anna M. Seaver, wife of the assistant fire chief, Henry T. Seaver of Newton, Mass.

Among those who called on the Boston trade last week were: R. F. Chapin, assistant manager of the Millers Falls Paper Company, Millers Falls, Mass.; W. T. Dole, secretary and purchasing agent of the Champion-International Company, Lawrence, Mass., and Mr. Arpin, of the Patten Paper Company, Ltd., Appleton, Wis.

The Federal File Envelope Company, Inc., has been incorporated here with a capital stock of 200 common shares having no par value. Incorporators are Maurice Winokar, president; David Cooper, 202 Billings road, Quincy, treasurer, and Rose Cooper.

T. R. Sullivan, office service manager of the Dennison Manufacturing Company, Framingham, Mass., is to speak before the New England Chapter of the National Office Management Association this evening at the University Club. Among those under whose direction the meeting will be held are Oscar Tacy and Harold M. Davis, of the Nashua Gummed and Coated Paper Company, Nashua, N. H.

Unusual commercial cooperation in connection with the flood is that shown by the Massachusetts Envelope Company and the Massachusetts Drinking Cup Company. As a result of action by the president, Maxwell B. Grossman, the stocks of articles made by these producers and destroyed by the recent rise of the rivers are being restored free of charge to the losers. Replacements are being made without discrimination to wholesalers, jobbers, dealers and users.

Indianapolis Reports Paper Products Active

[FROM OUR REGULAR CORRESPONDENT]

INDIANAPOLIS, Ind., April 13, 1936—Business in the paper converting field is rushing. Local container manufacturers report a fine volume of orders and most of the plants are working extra shifts. Warehouse stocks still are light due to the fact that orders are taking practically all the present production. The orders, according to executives are spread over a wide field, the number of industries in the market being considerably greater than two months ago. Many of the factories would like to increase their warehouse stocks to some extent, but with orders as they are, it is practically impossible. Two large envelope factories here are very busy and the outlook for the entire spring and early summer season is exceptionally bright. Prices are being held in line.

Thus far there has been no demand for summer specialties, but some inquiries are being received and the first hint of warm weather will see a good demand. Warehouse stocks are entirely adequate unless there is far more initial demand than is expected. Prices will be about the same as last year. Last week saw a good demand for bags, mostly from the cleaning industry. This was natural, but the general trend of all bags is upward and the season is ahead of last year. Demand for wrapping paper continued steady last week.

An ever increasing demand is seen for all kinds of building papers and the trade is looking for the best year it has had since 1928.

Prices here have been advanced over last year, but the percentage of increase is small.

Paper Specifications Committee Reports

[FROM OUR REGULAR CORRESPONDENT]

WASHINGTON, D. C., April 15, 1936—The Paper Specifications Committee of the Joint Congressional Committee on Printing had its preliminary meeting last week.

Subject to the approval of the Joint Committee itself the specifications committee will recommend that bids be opened on May 18 for a supply of paper for the Government Printing Office for the period beginning July 1 next. Awards will be made one week later.

The Specifications Committee will insert a new paragraph in the specifications providing in the future that the manufacturer mail the shipping tag direct to the Public Printer.

The Committee also considered, it is understood, new regulations on oil penetration and a new definition of finish will be included in the new specifications which will be in the nature of an enlarged paragraph on that which has been used in the past.

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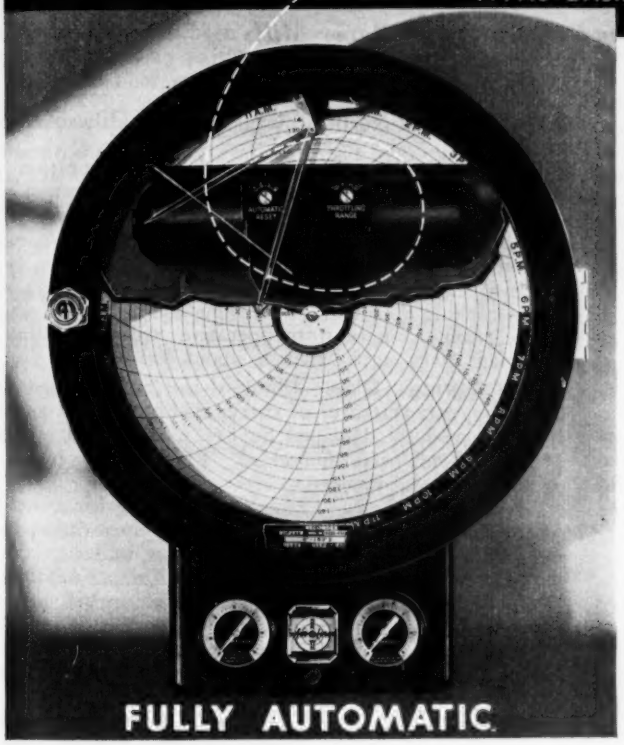

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The use of Graduated Dials for both ***Throttling Range*** and ***Automatic Reset*** in the Brown *AIR-o-LINE* is a revolutionary development in air operated controllers which assures accurate and precise control—because they provide an exact means of "Tuning In" to specific process characteristics without interruption to automatic control. Only in the Brown *AIR-o-LINE* will you find this modern advancement.

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OUTSTANDING PERFORMANCE WITH SIMPLICITY

CONSTRUCTION NEWS

A Summary of Vital Facts Regarding Construction, Finances and Operation of Paper Mills

Construction News

High Point, N. C.—The Carolina Container Company, Prospect road, manufacturer of corrugated paper boxes and containers, has plans under way for new one-story addition to plant, for which it is expected to ask bids on general contract at early date. It is estimated to cost close to $25,000, including equipment. Tyson T. Ferree, 110½ Washington street, High Point, is architect.

Kaukauna, Wis.—The Thilmany Pulp and Paper Company, manufacturer of tissue papers, waxed and other processed paper stocks, has awarded general contract to the Permanent Construction Company, 2712 North Holton street, Milwaukee, Wis., for proposed new addition to mill, previously referred to in these columns, Superstructure will be placed under way at once. New unit will be two-story, equipped for expansion in beater room and bleach division, and is estimated to cost close to $50,000, with equipment. Charles R. Seaborne is general superintendent, in charge.

Kalamazoo, Mich.—The Sutherland Paper Company, manufacturer of box board and kindred paper board products, has acquired former local plant of D'Arcy Spring Works, and will use for expansion in mill. An existing building will be remodeled and improved, with installation of equipment in near future. No estimate of cost has been announced.

Philadelphia, Pa.—The Paragon Paper Box Manufacturing Company has filed notice of organization to manufacture paper boxes and containers. Company will succeed to the Paragon Paper Box Company, with local plant at 1136 North American street. Organizers of new company include Reuben Chatzkel and Angelo Coia, 7016 Shelbourne street, Philadelphia.

Greensboro, N. C.—The Dillard Paper Company, general paper goods, plans early rebuilding of portion of storage and distributing building, recently damaged by storm. An official estimate of loss has not been announced.

Albany, N. Y.—The A.P.W. Paper Company, 1275 Broadway, manufacturer of tissue paper stocks. has closed bids on general contract for new addition to mill at North Albany, and is scheduled to place award at early date. New unit will be two-story and basement, 200 x 300 feet, known as Building E, and will be used primarily for storage and distribution. It is reported to cost over $75,000, including equipment. Johnson & Wierk, Grand Central Terminal, New York, N. Y., are consulting engineers.

Milwaukee, Wis.—The Shadur Paper Box Company, 1726 North First street, manufacturer of paper boxes and containers, has let contract to Harry Shames, Milwaukee, for interior alterations in factory, on which work will proceed at once. No estimate of cost announced. Clas & Clas, Inc., 759 North Milwaukee street, Milwaukee, are architects.

Cincinnati, Ohio—The Container Corporation of America, Inc., 5500 Eastern avenue, manufacturer of corrugated paper boxes and containers, has resumed operations at local plant, following shut-down for a few weeks and initially proposed as permanent. A petition by a group of employes at the plant, following discontinuance, has resulted in the change. Working conditions and wages at the plant, as heretofore operative, will be continued. The plant gives employment to about 400 persons.

Sand Springs, Okla.—Plant of the South West Box Company, manufacturer of corrugated boxes and containers, was recently damaged by fire. An official estimate of loss has not been announced. Plant will be rebuilt at once.

Glens Falls, N. Y.—Plans are maturing for a merger of the Imperial Wall Paper Company, operating a local mill, with a group of subsidiary interests, under the direction and control of Imperial Paper and Color Corporation, Glens Falls, parent organization. The principal mills in the consolidation will include those of the Plattsburg Wall Paper Company and Underwood Paper Mills, Inc., both with plants at Plattsburg, N. Y., specializing in the production of wall paper stocks.

Milwaukee, Wis.—The Paper Makers' Chemical Corporation, Riverview drive, Kalamazoo, Mich., manufacturer of paper mill supplies, has awarded general contract to the O. W. Wierdsma Company, 8334 Stickney avenue, Wauwatosa, Wis., for new one-story building, 88 x 210 feet, on North Hopkins street, Milwaukee, primarily for storage and distributing service, and will proceed with superstructure at early date. It will cost over $40,000, with equipment.

Thorold, Ont.—The Ontario Paper Company, manufacturer of news print, has taken over tract of land on the St. Lawrence River, about 200 miles north of Quebec, Que., as site for new paper mills, for which construction will begin during the Spring. It will consist of a group of units, with paper-making division equipped with two machines of rated capacity of about 300 tons per day. A large pulp and pulpwood department will be built, as well as a hydroelectric generating plant on the St. Lawrence River, for service at the mill; new station will have an initial capacity of 60,000-horsepower. A new townsite will be constructed by the company near the mill site, comprising a large group of dwellings for employes, school, hospital and other municipal structures. General contract for mill units, as well as other main buildings, has been awarded to the Foundation Company of Canada, Ltd., Montreal, Que. Project is scheduled for completion in the early summer of 1938, and will represent an investment of about $7,500,000.

New Companies

Springfield, Mass.—The Hinkson Paper Company has been incorporated with capital of $24,000, and 250 shares of stock, no par value, to manufacture and deal in paper products. J. R. Hinkson, Longmeadow, Mass., is president and treasurer.

Chicago, Ill.—General Card Company, 310 South Racine avenue, has been organized with capital of 100 shares of stock, no par value, to deal in card and paper stocks. The incorporators include A. A. Gelatt and Nathan Ruekberg.

Branchport, N. Y.—The Finger Lakes Insulation Company, Inc., has been chartered with capital of 200 shares of stock, no par value, to manufacture and deal in paper and fiber insulation products, etc. M. Maurice Chacchia, 435 Exchange street, Geneva, N. Y., is principal incorporator and representative.

Boston, Mass.—The Federal File Envelope Company, Inc., has been chartered with capital of 200 shares of stock, no par value, to manufacture and deal in envelopes and kindred paper products. Maurice Winokar is president; and David Cooper, 202 Billings road, Quincy, Mass., treasurer and representative.

Buffalo, N. Y.—Fine-Art Card Company, Inc., has been incorporated with capital of 300 shares of stock, no par value, to manufacture and deal in cards and card stocks. Troy T. Murray, 115 State street, Springfield, Mass., is principal incorporator and representative.

Paper Demand Fairly Active In Boston

[FROM OUR REGULAR CORRESPONDENT]

BOSTON, Mass., April 13, 1936—The volume of sales in the paper market here averaged at least fair last week. In some quarters of the fine paper division, business was very quiet, and in some others it was a little better. In the wrapping paper division, a number noted a fair business. At one house, it was stated that there had been a decided improvement since the first of the month. At another house, handling both wrapping paper and specialties, it was given out that on Friday, there was almost a record number of orders, the most since 1929. Quiet persisted in the box board market. Paper mills have recovered, or are recovering, from the devastating conditions brought about by the flood.

The paper stock market was rather quiet, with no quotable changes in values. In old papers, prices were fairly steady in mixed papers and folded news, as well as other grades. Bagging showed a somewhat easier tendency. New domestic rags were in less demand. Old domestic rags were unaltered in roofing stock, which is understood to set the pace generally for the other grades. Foreign rags maintained the same levels, with dark cottons moving to some extent.

A. F. Richter Visits Europe

WATERTOWN, N. Y., April 13, 1936—Augustus F. Richter, consulting engineer of the Stebbins Engineering and Manufacturing Company, accompanied by Mrs. Richter, sailed last week for an extended tour of Europe. He plans to visit England first and will then visit Norway, Sweden, Denmark, Germany and France. In 1935 Mr. Richter resigned as president of the company in order to devote his time to research. His son, Carl F. Richter, succeeded him as president. During the winter of 1926 Mr. Richter made a trip through the Scandinavian countries studying European papermaking methods. In the summer of 1928 he made an extensive business trip to Honolulu, the Philippine Islands and New Zealand.

NORTHERN MILLS REELECT DIRECTORS

(Continued from page 15)

offices, laboratories, and a large east story-and-a-half machine room. Available floor space is almost doubled by the new wings, which with the present building form a hollow square opening to the east so trucks may deliver supplies and equipment to doors opening off the inner court. Ben B. Ganther Company of Oshkosh, Wis., has the contract.

Freight Surcharges

Damaging effects caused by the emergency increase of 7 per cent in railroad freight rates were pointed out by J. E. Bryan, of the Wisconsin Paper and Pulp Manufacturers Association, at an Interstate Commerce Commission hearing conducted in Chicago last week by Clyde B. Atchinson.

Mr. Bryan testified that the freight surcharges cost the paper manufacturers of Wisconsin more than $250,000 in 1935. One manufacturer, he said, was forced into bankruptcy because of the increased rate, and another is preparing to close his mill this month. The commissioner also was told by Mr. Bryan that the surcharges resulted in eight mills transferring their traffic, amounting to $150,000, to other types of carriers. If the emergency freight rate is continued, he added, the entire industry will be compelled to turn to other forms of transportation.

Movement of Coal To Start Soon

Movement of coal to mills of the Fox River Valley by tugs and barges of the Fox River Navigation Company will be started in about two weeks. Shipments are made all through the season from the coal docks at Green Bay, Wis. The spring breakup of ice in the river and Lake Winnebago has begun, and navigation was declared officially opened this week.

News of the Industry

One important navigation improvement is the completion of a new lock on the Fox River at DePere, Wis. The lock walls are 211 feet long, and it will accommodate boats up to 140 feet in length. The lock replaces one built 39 years ago. The new one is of heavy concrete construction, and is one of the most modern on the river. It has been under construction for two winters by the U. S. Government engineers.

When negotiations are completed for purchase of 23,110 acres recently approved by the National Forest Reservation Commission, the Federal government will own 1,304,933 acres of national forests in Wisconsin. The new acquisitions will cost $67,092. The acreage of the national forests will be: Oconto, 233,498 acres; Argonne, 295,422; Flambeau, 132,848; Mondeaux, 103,206; Chequamegon, 428,932, and Moquah, 101,027.

Because the price exceeded by $45,000 the estimate by engineers, the City of Appleton, Wis., is advertising for new bids for the sewers which will connect paper mills with the new sewage disposal system now under construction. The estimate was $60,000, and the bid of C. R. Meyer & Sons Company was $105,000. The new system will eliminate pollution of the Fox River by mill waste.

Allis-Chalmers Company, Milwaukee, Wis., announced last week that its 10,000 employees are to be given vacations with pay hereafter, and that they will be given a bonus at Christmas time aggregating approximately $500,000. The company has plants at West Allis and LaCrosse, Wis., LaPorte, Ind., Springfield, Ill., Norwood, Ohio, and Pittsburgh and Boston.

PAPER TRADE JOURNAL
ESTABLISHED 1872
15 West 47th St., New York, N. Y.
Henry J. Berger
Editor

Ronald G. Macdonald
Editor Technical Section

Herbert J. Laughton
Associate Editor

Thomas J. Burke, C. A.
Editor Cost Section

Lynne M. Lamm
Washington Correspondent

Price, Per Copy, 10 Cents
Canada, $7.50; after Jan. 1, 1936, $6.00.

United States, Per Annum, $4.00
Foreign Countries in Postal Union, $6.00

Member Audit Bureau of Circulations

Vol. CII New York, April 16, 1936 No. 16

FUTURE MEETINGS

TECHNICAL ASSOCIATION OF THE PULP AND PAPER INDUSTRY, Summer International Meeting in Canada, August 3 to 7, Montreal, Quebec, The Saguenay. Details may be obtained from the secretary, R. G. Macdonald, 122 East 42nd street, New York.

NEW ENGLAND SECTION, Technical Association of the Pulp and Paper Industry—Third Friday of each month at the Nonotuck Hotel, Holyoke, Mass.

DELAWARE VALLEY SECTION, Technical Association of the Pulp and Paper Industry—fourth Friday of each month at the Engineers Club, Philadelphia, Pa.

LAKE STATES SECTION, Technical Association of the Pulp and Paper Industry—second Tuesday of each month at the Conway Hotel, Appleton, Wis.

KALAMAZOO VALLEY SECTION, Technical Association of the Pulp and Paper Industry—First Thursday of each month at the Park-American Hotel, Kalamazoo, Mich.

AMERICAN PULP AND PAPER MILL SUPERINTENDENTS' ASSOCIATION, Annual convention, Grand Rapids, Mich., June 24-26, 1936.

WORLD PRODUCTION OF NEWSPRINT

The aggregate production of newsprint throughout the world is steadily increasing. This is shown in an interesting table of statistics in the current number of the *Newsprint Service Bureau Bulletin* issued this week. While the aggregate production of the world has been mounting for some years past, the production of the United States, as may be seen from the table which is reprinted on the opposite page of this issue, has been steadily decreasing and in 1935 was for the first time slightly surpassed by that of Great Britain. The United States is now third on the list.

Canada is easily the world's premier producer of newsprint and as may also be seen from the table, is apparently increasing its hold on that position. The production of newsprint in Canada was, of course, wonderfully stimulated when newsprint was made free of duty in the Taft administration in 1911. The year 1926, first definitely gave Canada world leadership in the manufacture of newsprint paper, although that year still further accentuated the United States as by far the greatest user of that commodity. With a total North American production in 1926 of 3,768,000 tons, Canada furnished 1,882,000 tons, an increase of 24 per cent over 1925, and surpassing by 195,000 tons the output of the United States. Commenting on the tabular statistics, the *Newsprint Service Bureau Bulletin* says:

"A new high record of world newsprint production was established in 1935 with 7,628,000 short tons. This was 286,000 tons or approximately 4 per cent more than in 1934, which in turn was slightly greater than the previous world record of 7,319,000 tons in 1929.

"Canada made 36 per cent of the world production of newsprint last year, Great Britain 13 per cent and the United States 12 per cent. Germany contributed 6 per cent, Japan and France each 5 per cent, Newfoundland, Finland and Sweden each 4 per cent, with smaller amounts from other countries.

"The Canadian output of 2,753,000 tons of newsprint in 1935 was 154,000 tons more than the output in 1934 and also 24,000 tons more than the previous high record established in 1929.

The 970,000 tons of newsprint made in Great Britain in 1935, was also a new high record and 30,000 tons more than the production of newsprint in that country in 1934. For the first time Great Britain came into second place among the newsprint countries of the world, exceeding by 58,000 tons the quantity of newsprint made in the United States in 1935. The newsprint output in the United States has been decreasing heavily for several years and while there was a falling off of only 45,000 tons from 1934 to 1935, the output in the latter year was 574,000 tons under that of 1927 and still more below the peak year of 1926.

Newsprint production in Germany in 1935 was 18,000 tons more than in the previous year, but still much under 1931 and preceding years. A new high newsprint record was established in Japan with 368,000 tons of newsprint produced last year, a gain of 24,000 tons over 1934 and of 100,000 tons since 1928. Japan and France changed places in newsprint ranking last year with Japan going 10,000 tons ahead of France, whereas in 1934 France was 9,000 tons ahead of Japan. Production of newsprint in France is now nearly three times as much as in 1927.

"Newfoundland also made a new record in newsprint production in 1935 with 336,000 tons or 7,000 tons more than her closest competitor, Finland. Newsprint production in Finland has shown a consistent record of yearly increases from the 200,000 tons attained in 1927. Production of newsprint in Sweden in 1935 was 298,000 tons, a gain of 26,000 tons over the preceding year and of 23,000 tons over the previous high record in 1929. Norwegian newsprint production in 1935 was 182,000 tons or 27,000 tons more than in 1934, but still below the output in several preceding years.

"Only during the past two years have authentic reports upon Russian production been available. They totaled 190,000 tons in 1934 and 193,000 tons in 1935.

"There have been no large changes in newsprint production of the other smaller countries except that Italy, Spain and Poland have substantially increased since 1927, while newsprint production in Estonia and Denmark has almost disappeared.

"The table, giving figures for the past nine years, is based upon reports received direct by the Newsprint

World Production of Newsprint, 1927-1935

(Thousand Short Tons)

Country	1935	1934	1933	1932	1931	1930	1929	1928	1927	9-Year Average	Country
Canada	2,753	2,599	2,017	1,914	2,221	2,504	2,729	2,381	2,087	2,356	Canada
Great Britain	970	940	830	790	719	608	637	646	615	751	Great Britain
United States	912	957	946	1,009	1,157	1,282	1,392	1,418	1,486	1,173	United States
Germany	464	446	412	450	540	590	623	600	565	521	Germany
Japan	368	344	304	272	258	285	286	267	246	292	Japan
France	358	353	335	275	243	240	210	136	121	252	France
Newfoundland	336	316	271	272	295	287	256	231	203	274	Newfoundland
Finland	329	316	285	254	241	223	217	214	200	253	Finland
Sweden	298	272	266	257	265	240	275	234	239	261	Sweden
Russia	193	190	135(?)	125(?)	100(?)	90(?)	48(?)	7(?)	10(?)	100(?)	Russia
Norway	182	155	167	200	104	202	189	198	192	177	Norway
Netherlands	92	92	87	85	79	84	77	76	77	83	Netherlands
Italy	76	68	72	74	69	69	52	45	42	63	Italy
Austria	50	50	50	53	62	64	62	57	50	55	Austria
Belgium	48	51	39	40	44	50	57	50	50	48	Belgium
Switzerland	45	39	45(?)	45	49	47	48	40	40(?)	44	Switzerland
Spain	42	42	65(?)	65	62	32	30	26	25	43	Spain
Czechoslovakia	41	37	38	40	42	44	47	45	45	42	Czechoslovakia
Poland	34	32	23	23	27	27	23	20	17	25	Poland
Mexico	20	20	16	13	15	14	19	17	14	16	Mexico
Chile	6	6	....	....	....	....	....	....	....	1	Chile
Latvia	6	5	5	5	3	4	4	3	3	4	Latvia
Estonia	4	6	6	6	17	29	27	20	21	15	Estonia
Denmark	1	6	7	9	10	10	11	16	16	10	Denmark
Total	7,628	7,342	6,421	6,276	6,622	7,025	7,319	6,747	6,364	6,859	Total

Newsprint Service Bureau Bulletin

Service Bureau, information from foreign correspondents and reports to the Department of Commerce in Washington."

Flood Damage and Shut-Downs

On March 26, 1936, the American Paper and Pulp Association mailed a questionnaire to all of the companies in the flood areas, requesting data covering the cause of damage, number of days' operation lost and the approximate amount of damage. For the purpose of tabulation, all of the reports were classified in two groups, namely: the New England Group and the Middle Atlantic Group.

In the New England Group, seventy companies operating 93 mills reported in the survey, and of this total seventy-four mills were affected by flood conditions and nineteen were not affected. For the mills reporting flood damage and shut-downs, curtailed operations, were reported by forty-seven mills due to flood conditions, twelve reported dirty water, 24 reported loss of power, and twelve, lack of transportation. The loss of 419 days' operation was reported with the equivalent capacity loss amounting to 19,570 tons. According to records available in the office of association, the total daily capacity of all mills in the New England group amounts to 9,446 tons. Of this total 2,677 tons or 28.5 per cent of the daily capacity was affected directly or indirectly by flood conditions.

The total reported damage amounts to $476,461, and was distributed as follows: damage to mill property and equipment (including power facilities owned by companies) $421,036, damage to finished products in stock $27,600, and damage to raw materials and supplies $27,825.

On the basis of the number of days lost due to flood conditions, the mills classified with writing, paperboard and book papers as chief product had the greatest amount of down time in the order named. The book paper mills, followed by the writing and paperboard mills, reported the heaviest losses on the basis of the equivalent capacity lost.

In the Middle Atlantic Group, ninety-five companies operating 106 mills reported in the survey, and of this total forty-eight mills were affected by flood conditions and fifty-eight were not affected. For the mills reporting flood damage and shut-downs, curtailed operations were reported by thirty-one mills due to flood conditions, sixteen reported dirty water, twelve reported loss of power, and four, lack of transportation. The loss of 335 days' operation was reported with the equivalent capacity loss amounting to 9,665 tons. According to records available in office of the association, the total daily capacity for all mills in the Middle Atlantic group amounts to 19,398 tons. Of this total 2,635 tons or 13.6 per cent of the daily capacity was affected directly or indirectly by flood conditions.

The total reported damage amounts to $181,038, and was distributed as follows: damage to mill property and equipment (including power facilities owned by the companies) $91,638, damage to finished products in stock $87,500, and damage to raw materials and supplies $1,900.

On the basis of the number of days lost due to flood conditions the mills classified with tissue, miscellaneous grades and kraft wrapping papers as chief product had the greatest amount of down time. The book paper mills, followed by tissue and kraft wrapping mills, reported the heaviest losses on the basis of the equivalent capacity lost.

Government Paper Bids and Awards

[FROM OUR REGULAR CORRESPONDENT]

WASHINGTON, D. C., April 15, 1936—The Stanford Paper Company has been awarded the contract for furnishing the Government Printing Office with 1,930 pounds (10,000 sheets) of 28 x 41 193. white lithograph finish paper at 5.75 cents per pound, bids for which were received on April 1.

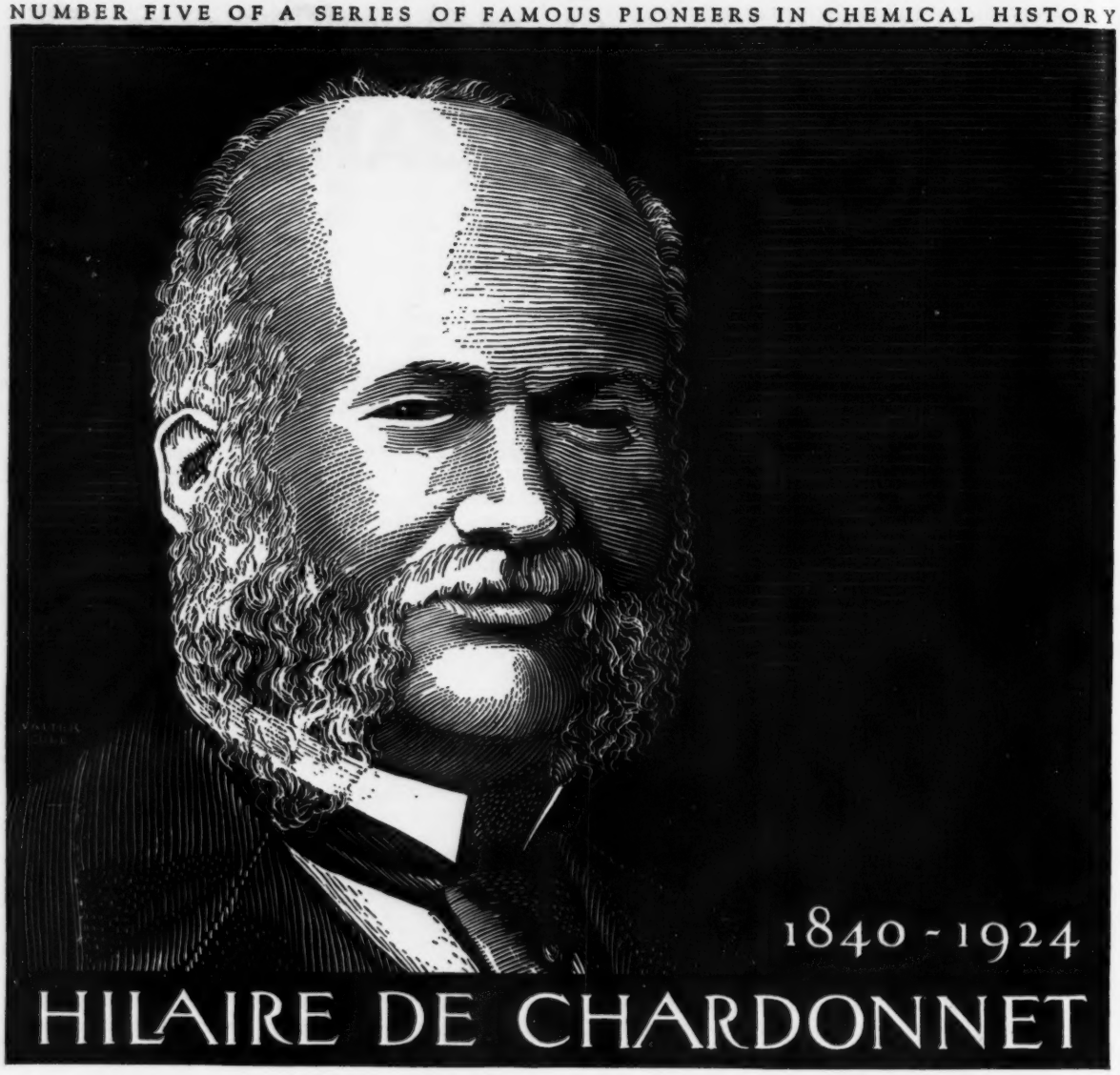
The same company will also furnish 6,250 pounds (50,000 sheets) of 20 x 25 50 per cent rag blue antique cover paper at 11.11 cents per pound, bids for which were received on March 30.

The Russell Products Company will furnish 500 pounds of facing stereo tissue paper in 24-inch rolls at 83 cents, bids for which were received on March 25.

George W. Millar & Co. will furnish 250 sheets of 22½ x 28½ yellow tag paper at 11.75 cents per pound, bids for which were received on March 23 and the Japan Paper Company will furnish 100 pounds (1,500 sheets) of 50 per cent rag gray laid antique cover paper at $25 per ream, bids for which were received on March 13.

Bids have been received for 7,400 pounds (50,000 sheets) of sulphite manila paper as follows: Barton, Duer & Koch Paper Company, at 5.45 cents per pound; George W. Millar & Company, 5.14 cents; Old Dominion Paper Company, 5.9 cents; and Stanford Paper Company, 5.14 cents.

NUMBER FIVE OF A SERIES OF FAMOUS PIONEERS IN CHEMICAL HISTORY



1840 - 1924

HILAIRE DE CHARDONNET

PARIS was startled in 1889 to see for the first time a gown of man-made silk. The silk had been produced by Count Hilaire de Chardonnet and was such an impressive product that funds were readily obtained for the erection of the world's first artificial silk factory at Besançon, de Chardonnet's home town in northern France. From this pioneer venture, followed by other processes and by continuous improvement in product quality over the years, the giant rayon industry of today has developed. Consuming enormous tonnages of chemicals, rayon manufacture also demands chemicals of exceptionally high purity. Mathieson, pioneer producer of high purity caustic soda and other industrial chemicals, is proud of its part in helping to build this great industry.

The MATHIESON ALKALI WORKS (*Inc.*), 60 East 42nd St., New York, N.Y.

In 1884, Hilaire de Chardonnet, a French nobleman, patented a process of manufacturing artificial silk in which nitrocellulose was forced through fine capillary openings. His discovery was not a matter of mere chance—it resulted from long study of ways and means of imitating the processes of the silk worm. De Chardonnet's successful and epochal work justly earned for him the title of "Father of the Rayon Industry."

SODA ASH . . . CAUSTIC SODA . . . BICARBONATE OF SODA . . . LIQUID CHLORINE . . . BLEACHING POWDER . . . HTH AND HTH-15 . . .

Mathieson Chemicals

AMMONIA, ANHYDROUS AND AQUA . . . PH-PLUS (FUSED ALKALI) . . . SOLID CARBON DIOXIDE . . . CCH (INDUSTRIAL HYPOCHLORITE)

Section of the
Technical Association of the Pulp and Paper Industry
Edited by Ronald G. Macdonald, Secretary

United States Patents on Paper Making

First Quarter, 1936

Compiled by Clarence J. West, Chairman, Committee on Abstracts and Bibliography, TAPPI

The following list of patents has been compiled from the current numbers of the Official Gazette of the United States Patent Office. Since, as a rule, only one claim is published in the Gazette, it is not claimed that the list is complete.

Copies of any of the following patents may be obtained from the Patent Office, Washington, D. C., by sending ten cents ($0.10) for each patent desired. At least the name of patentee, the number and date of the patent should be given. Personal checks and stamps are not accepted in payment for patents.

JANUARY 7, 1936

2,026,533. Apparatus for cutting paper or other material. Albertus Hendrik Haupt, assignor to Imperial Chemical Industries Limited, a corporation of Great Britain. Filed Aug. 7, 1934. 5 claims. (Cl. 164-66).

2,026,584. Method of liberating fibers. Joseph A. Manahan, Boston, Mass. Filed Jan. 11, 1935. 19 claims. (Cl. 92-9). Plant fibers are liberated from connective tissue by treating with an emulsifying agent, then with an alkaline salt solution, and finally with a softening agent.

2,026,594. Flooring material and method of making same. Herman William Richter, Bridgewater, Mass. Filed May 4, 1931. 4 claims. (Cl. 154-40). Asphalt emulsion is applied to preheated sheets and a plurality of such sheets are pressed together.

2,026,711. Method and apparatus for making window bags. Harold Smithwick and Peter Halbo, assignors to Ramco, Inc., a corporation of Delaware. Filed May 4, 1933. 15 claims. (Cl. 93-19).

2,026,754. Manipulation of sheet material. Charles Ernest Stafford, assignor to Celanese Corporation of America, a corporation of Delaware. Filed Feb. 8, 1933. 18 claims. (Cl. 164-65). Apparatus for slitting foil.

2,026,765. Molding process and molded article. Watson H. Woodford, assignor to Remington Arms Company, Inc., a corporation of Delaware. Filed July 13, 1932. 20 claims. (Cl. 92-54). Method of making a shot shell wad.

2,026,865. Method of producing a cellulose product. John Campbell and Robert G. Quinn, assignors to International Paper Company, New York, N. Y. Filed Jan. 20, 1934. 8 claims. (Cl. 92-20). A bulking agent from comminuted regenerated cellulose scrap.

2,026,900. Method of manufacturing refined pulp from straw of graminaceous plants. Kenta Kodama, Fukui, Japan. Filed June 3, 1935. 4 claims. (Cl. 92-9). The straw is first digested in a mixture of sulphuric acid and sea-water or brine and then in caustic soda.

2,026,996. Method of molding pipes. Harry Rafovich, Detroit, Mich. Filed May 20, 1932. 5 claims. (Cl. 18-59). Method of molding hollow articles of fiber and a binder which hardens under heat.

2,027,041. Machine for refining paper stock and pulp. Walter H. Hermann and Ludwig H. Wessel, assignors to The Hermann Manufacturing Company, Lancaster, Ohio. Filed June 26, 1933. 9 claims. (Cl. 92-27).

2,027,087. Abrasive sheet and process of making the same. Orello S. Buckner, assignor to Behr-Manning Corporation, Troy, N. Y. Filed Oct. 3, 1928. 8 claims. (Cl. 91-68). The magnetically coated grains of the abrasive material are added to the surface in a magnetic field.

2,027,090. Means and method for dispersing matter in manufactured material. William W. Carter, assignor to Brayton Morton, Fall River, Mass. Filed June 30, 1930. 18 claims. (Cl. 92-21). Method of felting fibers with other fibers having in attached connection with them particles of added material encysted in colloidal envelopes.

2,027,166. Rosin sizing and method of making the same. William H. Harding and Albert W. Montgomery, assignors to American Cyanamid and Chemical Corporation, New York, N. Y. Filed Oct. 24, 1930. 10 claims. (Cl. 134-21). A solution of an alkali metal compound and rosin mix is subjected to drying heat above 200° F., but not more than 500° F., relatively suddenly, whereby the mix is carried rapidly through and beyond the gelling and foaming stages and saponification accelerated.

2,027,205. Method and apparatus for making bags. William E. Sharkey, assignor to The Raymond Bag Company. Middletown, Ohio. Filed March 16, 1935. 14 claims. (Cl. 93-35).

2,027,233. Cutter mechanism for packaging machines. Robert J. Hutt and George A. Hutt, Brooklyn, N. Y. Filed Nov. 30, 1934. 5 claims. (Cl. 164-62).

2,027,307. Method of coating and apparatus therefor and product. Elmer C. Schacht, assignor to Behr-Manning Corporation, Troy, N. Y. Filed July 30, 1928. 40 claims. (Cl. 91-68). Method of applying an abrasive material.

2,027,308. Manufacture of abrasive articles. Elmer C. Schacht, assignor to Behr-Manning Corporation, Troy, N. Y. Filed Nov. 20, 1931. 5 claims. (Cl 91-18). Method of applying the abrasive material.

2,027,309. Abrasive material. Elmer C. Schacht, assignor to Behr-Manning Corporation. Troy, N. Y. Filed March 24, 1932. 1 claim. (Cl. 51-185). The abrasive material is positioned by electric action.

2,027,343. Blank for container closures and method of making the same. Leon E. La Bombard, assignor to Oswego Falls Corporation, Fulton, N. Y. Filed Sept. 5, 1934. 2 claims. (Cl. 93-1). A series of connected and partially blanked bottle closures and a disk of comparatively stiff material of substantial thickness permanently secured to each closure blank.

2,027,344. Method of forming slip covers for containers. Leon E. La Bombard, assignor to Oswego Falls Corporation, Fulton, N. Y. Filed Sept. 5, 1934. 4 claims. (Cl. 93-55).

JANUARY 14, 1936

R19,821. Multiply paper. Ezra B. Fish, assignor to The Interstate Folding Box Company, Middletown, Ohio. Filed Sept. 12, 1935. Original number 1,552,286, dated Sept. 1, 1925. 4 claims. (Cl. 92-40). A photographically opaque ply and a facing ply united by interlocking of the fibers.

2,027,390. Oil and water-proof product. Wilbur A. Lazier and James H. Werntz, assignors to E. I. du Pont de Nemours and Company, Wilmington, Del. Filed June 28, 1932. 6 claims. (Cl. 91-68). Fibrous organic sheet material coated with a saturated fatty acid ester.

2,027,434. Bag making and filling machine. Emil G. Jurgens and Hazen K. Becker, assignors to Peters Machinery Co., Chicago, Ill. Filed March 24, 1933. 5 claims. (Cl. 93-5). Mechanism for twisting the necks of filled paper bags.

2,027,435. Art of sticking bodies. Ernest L. Kallander and Gardner R. Alden, assignors to Dennison Manufacturing Company, Framingham, Mass. Filed Nov. 15, 1932. 12 claims. (Cl. 91-68). Method of controlling the tackiness of a polymerized vinyl ester resin.

2,027,436. Adhesive tape. Ernest L. Kallander and Gardner R. Alden, assignors to Dennison Manufacturing Company, Framingham, Mass. Filed Jan. 10, 1934. 13 claims. (Cl. 91-68). Use of a vinyl ester resin.

2,027,461. Wiper for adhesive-applying implements. Donald R. Anderson, Wausau, Wis. Filed March 13, 1934. 1 claim. (Cl. 91-53). Combination of two wiper plates.

2,027,484. Method of manufacturing paper bottles. Lydia Barbara Koch and Andrew Bodor, assignors to Reinforced Paper Bottle Corporation, New York, N. Y. Filed May 5, 1934. 7 claims. (Cl. 93-39).

2,027,523. Gluing machine. Ralph R. Erbe, assignor to The Capehart Corporation, Fort Wayne, Ind. Filed May 26, 1934. 13 claims. (Cl. 91-50).

2,027,581. Fibrous product and method of making the same. George H. Ellis, assignor to The Insulite Company, Minneapolis, Minn. Filed Feb. 5, 1934. 4 claims. (Cl. 92-21). A toxic agent mixed with melted rosin is added to the pulp to act as an insecticide and fungicide.

2,027,582. Aqueous dispersion. Jacob Mitchell Fain, assignor to The Patent and Licensing Corporation, New York, N. Y. Filed Jan. 24, 1931. 15 claims. (Cl. 134-1). Method of making a bitumen emulsion with a soluble soap and a mineral powder colloid.

2,027,586. Decorative material and article. Fred George, assignor to The Hinde and Dauch Paper Company, Sandusky, Ohio. Filed Dec. 18, 1933. 12 claims. (Cl. 154-55). A composite board.

2,027,611. Paper making machine. Nikolas J. Niks, Munising, Mich. Filed Jan. 25, 1934. 26 claims. (Cl. 92-44). Method of distributing the stock on the wire.

2,027,649. Machine for shaping cardboard articles. Edwin H. Newton, assignor to National Paper Box Co., Kansas City, Mo. Filed Sept. 18, 1933. 12 claims. (Cl.93-1).

2,027,654. Bag forming machine. David Schmidt, assignor to The Dobeckmun Company. Cleveland, Ohio. Filed Sept. 4, 1934. 12 claims. (Cl. 93-25).

2,027,660. Freeness detector. Harold Donald Wells, Glens Falls, N. Y. Filed July 16, 1934. 11 claims. (Cl. 92-38).

2,027,686. Coating compositions and the process for their production. Paul Friedrich, assignor to Trustkantoor Amstelland N. V., Amsterdam, Netherlands. Filed July 1, 1933. 7 claims. (Cl. 134-13). A mixture of bituminous hydrocarbons, aliphatic chlorohydrocarbons and fluid derivatives of benzene.

2,027,741. Paper manufacture. Goyn D. Mackrell, Brooklyn, N. Y. Filed Feb. 16, 1935. 2 claims. (Cl. 91-67.95). Paper having indicia therein, the crushed portions of the fibers being treated with glycerine, so that they are visible when the paper is wet.

2,027,810. Perforated cellophane and the like and method of making the same. Simon Cooper, assignor to Cooper Tea Packet Company, Brooklyn, N. Y. Filed Oct. 30, 1933. 5 claims. (Cl. 164-125).

2,028,004. Roof covering. Harry T. Nichols, Bridgeport, Conn. Filed Feb. 12, 1931. 9 claims. (Cl. 108-7). A shingle.

2,028,080. Wood pulp adapted for chemical use. Raphael L. Stern, assignor to Hercules Powder Company, Wilmington, Del. Filed Dec. 28, 1934. 17 claims. (Cl. 92-20). Method of subdividing chemical wood pulp for chemical treatment.

JANUARY 21, 1936

2,028,163. Process and apparatus for manufacturing paper cups. Abraham Novick, assignor to United States Envelope Company, Springfield, Mass. Filed Jan. 11, 1930. 52 claims. (Cl. 93-36).

2,028,180. Acoustic materials. Harold D. Arnold, assignor to Bell Telephone Laboratories, Incorporated, New York, N. Y. Filed Sept. 18, 1930. 2 claims. (Cl. 154-44).

2,028,253. Insulation pad and construction. Allen L. Spafford, assignor to The Wood Conversion Company, Cloquet, Minn. Filed Sept. 15, 1930. 13 claims. (Cl. 154-44).

2,028,419. Apparatus for the continuous treatment of fibrous materials. Luke H. Sperry, assignor to Hercules Powder Company, Wilmington, Del. Filed May 31, 1934. 4 claims. (Cl. 92-7).

2,028,552. Cigarette. Albert H. Low, assignor of one-fourth to Carle Whitehead and Albert L. Vogl, Denver, Colo. Filed Oct. 15, 1932. 8 claims. (Cl. 131-52). Cigarette paper is impregnated with a soluble silicate, having a fixed alkali base and a fixed alkali nitrate.

2,028,673. Stock inlet for paper making machines. Richard T. Lang, assignor to American Voith Contact Co., Inc., New York, N. Y. Filed Dec. 7, 1934. 3 claims. (Cl. 92-44).

2,028,715. Fire resistant composition. Ernest R. Hanson, assignor to Halowax Corporation, New York, N. Y. Filed April 27, 1931. 16 claims. (Cl. 134-78.6). Halogenated hydrocarbons.

JANUARY 28, 1936

2,028,781. Process of producing decorative sheet material. James J. Jackson, assignor to Sandura Company, Inc., Philadelphia, Pa. Filed March 2, 1933. 21 claims. (Cl. 91-68). A regulated amount of a liquid backing composition is applied to one side of a porous sheet and decorative coloring material is applied to the opposite side.

2,028,782. Decorative sheet material and process of manufacturing the same. James J. Jackson, assignor to Sandura Company, Inc., Philadelphia, Pa. Filed March 2, 1933. 13 claims. (Cl. 91-70). The sheet is impregnated with a mixture of ester gum, China wood oil and chlorinated napthalene.

2,028,846. Cellulose pulp for esterification purposes and processing of same. George A. Richter, assignor to Brown Company, Berlin, N. H. Filed June 22, 1931. 2 claims. (Cl. 260-100). Hardwood pulp is treated with a mercerizing liquor containing an oxidant for two to eight hours, and then changed into viscose.

2,028,948. Decorative paper and method of making the same. Joseph J. Pohlmann, assignor to The Beveridge-Marvellum Company, Holyoke, Mass. Filed Nov. 7, 1934. 2 claims. (Cl. 41-26).

2,028,952. Apparatus for and method of making paper. Philip J. Reimer, Neenah, Wis. Filed Feb. 14, 1934. 12 claims. (Cl. 92-40). Forming box attachment for fourdrinier machines.

2,028,962. Laminated panel. Herbert J. Woodall and Meredith S. Randall, assignors to Woodall Industries Incorporated, Detroit, Mich. Filed June 22, 1932. 4 claims. (Cl. 154-44).

2,029,034. Pressed fiber board and method of manufacture. Robert T. Pollock, assignor to Respats, Inc., Cranston, R. I. Filed July 31, 1933. 4 claims. (Cl. 92-3).

2,029,086. Method of and an apparatus for charging cellulose digesters or the like. Sjune Svensson, Hissmofors, Krokom, Sweden. Filed Oct. 27, 1934. 10 claims. (Cl. 92-7).

2,029,123. Process of fitting jordan shell linings. Harold D. Stuck, assignor to John W. Bolton and Sons, Inc., Lawrence, Mass. Filed July 12, 1934. 15 claims. (Cl. 29-84). The knives and separators are placed in the large end of a truncated conical mold and the assembly forced into the small end of such mold.

2,029,125. Wood grinding machine. Andrew N. Russell and John D. Robb, assignors to Dominion Engineering Works, Limited, Lachine, Quebec, Canada. Filed May 18, 1932. 8 claims. (Cl. 83-75).

2,029,273. Process of coating paper. William J. Montgomery and Donald B. Bradner, assignors to The Champion Paper and Fibre Company, Hamilton, Ohio. Filed Jan. 25, 1929. 30 claims. (Cl. 101-426). Paper is cemented to coating on a hard non-adhering finishing surface, the paper and coating separated, the coating being hardened prior to the separation.

FEBRUARY 4, 1936

2,029,310. Felt and process of making same. Pierre Drewsen, assignor to The Barrett Company, New York, N. Y. Filed Feb. 24, 1926. 33 claims. (Cl. 92-3). A roofing felt from jute fibers.

2,029,340. Manufacture of bags. Thomas M. Royal, Philadelphia, Pa. Filed July 28, 1932. 10 claims. (Cl. 93-35). Multiwall paper bags.

2,029,360. Heat recovery system. Dion Kanouse Dean, assignor to Foster Wheeler Corporation, New York, N. Y. Filed Aug. 23, 1935. 14 claims. (Cl. 92-2). Means for recovery of heat from a digester.

2,029,390. Waterproofed plastic paper and method of producing the same. Earle V. Rodgers, Kenilworth, N. J. Filed June 8, 1933. 4 claims. (Cl. 91-68). Creped paper is treated with a non-aqueous solution containing a pigment and a stearate and an organic solvent.

2,029,394. Box blank folding mechanism. Melvin H. Sidebotham, assignor to Specialty Automatic Machine Company, Medford, Mass. Filed July 2, 1934. 27 claims. (Cl. 93-41).

2,029,525. Transparent tissue and process of making same. Carleton Ellis, assignor to Ellis-Foster Company, Montclair, N. J. Filed Nov. 14, 1929. 4 claims. (Cl. 91-68). A urea aldehyde resin and a plasticizing synthetic resin are used in glassine paper.

2,029,616. Process for preparing alkali sulphite or alkali bisulphite solutions from waste liquors obtained in the digestion of cellulose with alkali sulphur compounds. Gustaf Haglund, assignor to Patentaktiebolaget Gröndal-Ramen, Stockholm, Sweden. Filed April 10, 1931. 11 claims. (Cl. 23-129). The sulphite waste liquors are treated with sulphur dioxide and one or more calcium compounds and then with one or more alkali metal compounds.

2,029,624. Paper slitting and slotting machine. James Edgar Lee, Olaf T. Gylleck and Freeman Barney, assignors to The Challenge Machinery Company, Grand Haven, Mich. Filed Dec. 3, 1934. 17 claims. (Cl. 164-48).

2,029,625. V-slot paper cutter. James Edgar Lee, James Wesley Lee, Olaf T. Gylleck and Freeman Barney, assignors to The Challenge Machinery Company, Grand Haven, Mich. Filed Aug. 26, 1935. 9 claims. (Cl. 164-15).

2,029,973. Paper pulp making process. Sidney D. Wells, Combined Locks, Wis., assignor of one-half to Gerald D. Muggleton, Appleton, Wis. Filed Aug. 22, 1934. 9 claims. (Cl. 92-6). Beating of fibers suspended in partially spent, hot cooking lyes by means of a rod mill.

2,030,021. Method and apparatus for the production of sulphur dioxide. Harold O. C. Ingraham, assignor to General Chemical Company, New York, N. Y. Filed Sept. 15, 1932. 8 claims. (Cl. 75-60). Method of burning sulphur and purifying the gas therefrom.

FEBRUARY 11, 1936

2,030,118. Process and machine for long lip bags. George W. Poppe, assignor to Equitable Paper Bag Co., Inc., Brooklyn, N. Y. Filed Aug. 8, 1931. 15 claims. (Cl. 93-18).

2,030,156. Process of coating creped papers and the product thereof. William Wallace Rowe, assignor to The Paper Service Company, Lockland, Ohio. Filed Jan. 16, 1931. 17 claims. (Cl. 154-33).

2,030,267. Fertilized mulch paper. Edward Roy Pratt, West Medford, Mass. Filed Jan. 7, 1935. 7 claims. (Cl. 49-9).

2,030,382. Method of treating pulp. Arno J. Luth, Richard A. Nugent and Neil H. Christian, assignors to Nekoosa-Edwards Paper Company, Port Edwards, Wis. Filed Oct. 18, 1934. 11 claims. (Cl. 8-2). Pulp is treated in a closed vessel under pressure with sodium hydroxide solution to remove phlobotannin color bodies and then bleached.

2,030,383. Method of treating pulp. Arno J. Luth, Richard A. Nugent and Neil H. Christian, assignors to Nekoosa-Edwards Paper Company, Port Edwards, Wis. Filed Oct. 18, 1934. 7 claims. (Cl. 92-14). Pulp is treated with caustic solution in a closed vessel to dissolve color bodies present and then washed.

2,030,384. Method of bleaching pulp. Arno J. Luth, Richard A. Nugent and Neil H. Christian, assignors to Nekoosa-Edwards Paper Company, Port Edwards, Wis. Filed Oct. 18, 1934. 7 claims. (Cl. 8-2). Before bleaching pulp is treated with sodium hydroxide and sodium peroxide.

2,030,469. Manufacture of parchment papers. George A. Richter, assignor to Brown Company, Berlin, N. H. Filed Sept. 2, 1932. 2 claims. (Cl. 8-20). A variegated ornamental appearance is attained by distributing through the paper over localized areas only a compound which reacts with sulphuric acid to produce an opaque, insoluble filler and then treating with the parchmentizing agent.

2,030,483. Method for the manufacture of coated paper. Diong D. Uong, assignor to Fitchburg Paper Company, Fitchburg, Mass. Filed April 1, 1933. 1 claim. (Cl. 92-40). Coating in dry powdered form is applied to partially dried paper web.

2,030,538. Continuous filter. Roger W. Richardson, Wilmington, Del. Filed March 21, 1932. 7 claims. (Cl. 92-52). Suction box.

2,030,625. Apparatus for and process of making synthetic products. George H. Ellis, assignor to The Insulite Company, Minneapolis, Minn. Filed Jan. 13, 1934. 22 claims. (Cl. 92-21). Method of incorporating a toxic agent and forming a hard, insecticide-proof board.

2,030,626. Fibrous product and method of making the same. George H. Ellis, assignor to The Insulite Company, Minneapolis, Minn. Filed April 27, 1934. 21 claims. (Cl. 92-39). Boards from waste fibrous materials.

2,030,653. Fireproofing. Robert G. Quinn, assignor to International Paper Company, New York, N. Y. Filed Dec. 18, 1931. 20 claims. (Cl. 92-21). Use of ammonium phosphate, boric acid and a non-inflammable water-proofing composition and treating the surface of the board with a solution of ammonia.

2,030,668. Means for insulating walls. Frederick Weyerhaeuser and John S. Busch, assignors to Wood Conversion Company, Cloquet, Minn. Filed Aug. 26, 1932. 6 claims. (Cl. 20-4).

2,030,693. Laminated paper barrel. James A. Eden, Springfield, Mass. Filed March 23, 1934. 18 claims. (Cl. 93-36). Barrel wrapped with a continuous strip of paper.

2,030,743. Adhesive or binder. Richard P. Carlton, assignor to Minnesota Mining and Manufacturing Company, St. Paul, Minn. Filed May 23, 1925. 13 claims. (Cl. 134-23). Waterproof binder for sandpaper.

2,030,746. Crinkled sheet material and method of making same. James J. Galligan and Fred O. Thornton, Jr., assignors to United States Rubber Company, New York, N. Y. Filed Aug. 18, 1934. 12 claims. (Cl. 154-2).

FEBRUARY 18, 1936

R19,856. Method of and machine for making pulp articles. Ralph W. Chapman, assignor to The Old Town Company, a corporation of Maine. Original No. 1,778,934, dated Oct. 21, 1930. Application for reissue Oct. 15, 1932. 31 claims. (Cl. 92-59).

2,030,859. Textile assistants. Othmar Drapal, assignor to General Aniline Works, Inc., New York, N. Y. Filed Aug. 31, 1934. 6 claims. (Cl. 252-1). Spent sulphite liquor is one constituent.

2,030,885. Apparatus for burning sulphur. Myles Standish Maxim, Somerville, Mass. Filed June 15, 1931. 7 claims. (Cl. 23-278).

2,030,946. Manufacture of fiber products. Daniel Manson Sutherland, Jr., Morrisville, Pa. Filed Oct. 31, 1930. 2 claims. (Cl. 92-20). Reuse of white water in processing wet fiber stock.

2,030,962. Moistureproof material and method of making same. William Hale Charch, William L. Hyden and John C. Siemann, assignors to Du Pont Cellophane Company, Inc., New York, N. Y. Filed Aug. 5, 1932. 42 claims. (Cl. 91-68).

2,031,035. Method of making moistureproof paperboard and the like. Carl G. Dreymann, assignor to Grant Paper Box Company, a corporation of Pennsylvania. Filed Oct. 11, 1933. 3 claims. (Cl. 154-40).

2,031,036. Composition of matter and method of its production. Carl G. Dreymann, assignor to Grant Paper Box Company, a corporation of Pennsylvania. Filed May 17, 1934. 5 claims. (Cl. 154-50). A container wall for the packaging of material, waterproofed with petroleum wax.

2,031,053. Apparatus for forming, folding and banding paper strips. Alvin A. Massini, Wheeling, W. Va. Filed Sept. 17, 1934. 36 claims. (Cl. 93-1).

2,031,239. Process for the utilization of sugarcane bagasse. Alfred M. Thomsen, San Francisco, Calif. Filed Sept. 4, 1934. 3 claims. (Cl. 92-9). The lignified fiber of the bagasse is digested with alkaline cooking liquor.

2,031,249. Waterproof and fireproof floor construction. Oliver S. Bowman, Colorado Springs, Colo. Filed Feb. 27, 1932. 5 claims. (Cl. 94-3).

2,031,260. Infusible synthetic resins and process of making same. Alphonse Gams, Gustave Widmer and Karl Frey, assignors to the firm of Ciba Products Corporation, Dover, Del. Filed Oct. 8, 1929. 27 claims. (Cl. 92-21). Paper is impregnated with the condensation product of aniline and formaldehyde.

2,031,261. Seal-flap gumming and drying in envelope machine. Max Goder, assignor to United States Envelope Company, Springfield, Mass. Filed May 6, 1935. 5 claims. (Cl. 93-62).

2,031,275. Adhesively coated sheet material. William W. McLaurin, by Old Colony Trust Company, executor, Boston, Mass. Filed May 10, 1933. 5 claims. (Cl. 154-43). A union of a heavy backing sheet and a tissue sheet, which may be readily pulled apart in a dry condition.

2,031,362. Water-resistant sandpaper and other abrasive papers and process of making same. Carleton Ellis, assignor to Ellis-Foster Company, Montclair, N. J. Filed Feb. 18, 1927. 9 claims. (Cl. 51-280). Paper is rendered water-resistant by wax deposited from emulsion in the paper stock.

2,031,403 Sulphur burner. Isaac Bencowitz, assignor to Texas Gulf Sulphur Company, New York, N. Y. Filed March 12, 1932. 3 claims. (Cl. 23-179).

2,031,485. Method of bleaching pulp. Hans John, Clarence C. LeFebvre and Horace Du Bois, assignors to Paper Patents Company, Neenah, Wis. Filed May 20, 1931. 30 claims. (Cl. 8-2). Combination of acid and alkaline hypochlorite bleaching.

2,031,504. Manufacture of sulphur dioxide. Brodde E. F. Rhudin, assignor of one-half to Albert H. Chitty, Sault Ste. Marie, Canada and one-half to David Munroe, Belleville, N. J. Filed Nov. 18, 1931. 8 claims. (Cl. 23-277). Method of producing sulphur dioxide from pyrites.

2,031,580. Procedure and apparatus for making window bags and wrappers. Richard S. Grant and Alfred A. Schlegel, assignors to The Jaite-Grant Display Bag Company, Cleveland, Ohio. Filed May 10, 1933. 11 claims. (Cl. 93-35).

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2,031,801. Burning of pyrites. Daniel Tyrer, assignor to Imperial Chemical Industries Limited. London, England. Filed Oct. 11, 1932. 7 claims. (Cl. 23-226).

2,031,854. Surface-finished paper. George A. Richter, assignor to Brown Company, Berlin, N. H. Filed Sept. 11, 1931. 1 claim. (Cl. 91-68). A paper containing 2.5 to 5% (on dry fiber) of water resisting sizing agent and at least one surface of which is surfaced with a pellicle of regenerated cellulose, so intimately bonded as to constitute in effect a single ply of integral structure.

2,031,973. Impregnation of wood. Charles W. Mudge, assignor to Standard Oil Development Company, a corporation of Delaware. Filed Oct. 24, 1931. 4 claims. (Cl. 99-12). Method of impregnating fiber board with Montan wax.

2,031,974. Recovery of chemicals from waste pulping liquors. Harold R. Murdock, assignor to The Champion Fibre Company, Canton, N. C. Filed Nov. 4, 1933. 5 claims. (Cl. 23-48). Black liquor is treated with a combustion-promoting inorganic compound which is adapted to yield a substantial proportion of a sodium-containing active pulping chemical and incinerating the mixture.

2,032,083. Building material. William G. Dudleston, assignor to The Patent and Licensing Corporation, Boston, Mass. Filed Dec. 12, 1931. 7 claims. (Cl. 20-5). Bituminous board and a facing sheet of roofing felt.

2,032,211. Paper coating apparatus and method. Lloyd Hornbostel, assignor to Beloit Iron Works, Beloit, Wis. Filed March 3, 1931. 8 claims. (Cl. 92-68). Drying method.

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2,032,343. Paper food container. William H. Arthur, assignor to Beach and Arthur, Inc., Indianapolis, Ind. Filed July 16, 1934. 18 claims. (Cl. 93-36). Method of making a container for beverages.

2,032,385. Safety paper and process for making it. Frank S. Wood, assignor to Frank W. Wood, Astoria, N. Y. Filed Aug. 16, 1933. 3 claims. (Cl. 92-21). Banknote safety paper containing a relatively small quantity of pulp with a water-soluble fugitive dye.

2,032,437. Fiber-liberating process. George A. Richter, assignor to Brown Company, Berlin, N. H. Filed Oct. 11, 1934. 21 claims. (Cl. 92-11). Raw material is impregnated with ammonia and treated with sulphur dioxide and water to form ammonium sulphite pulping liquor *in situ*.

2,032,503. Process and apparatus for sealing paper bags. John A. Rosmait, Manistee, Mich. Filed May 2, 1932. 15 claims. (Cl. 93-35).

2,032,570. Paraffining machine. Karl E. Garling, assignor to Soda Straw Manufacturing Corporation, Newark, N. J. Filed March 25, 1931. 5 claims. (Cl. 91-42).

2,032,615. Paper making. Clark T. Henderson, Burlingame, Calif. Filed Dec. 28, 1933. 3 claims. (Cl. 92-21). Beating a mixture of incompletely bleached raw kraft pulp with a minor proportion of a fully bleached raw sulphite pulp.

2,032,645. Absorbent paper product and process of producing the same. Merrill A. Youtz, assignor to Northern Paper Mills, Green Bay, Wis. Filed Aug. 18, 1933. 1 claim. (Cl. 92-40). From 0.05 to 0.2% of a wetting agent is incorporated in paper towels to decrease the normal loss of absorbency on storage.

2,032,709. Paper bag machine attachment. Albert Midboe, assignor to Equitable Paper Bag Co., Inc., Brooklyn, N. Y. Filed April 13, 1933. 4 claims. (Cl. 93-20).

2,032,816. Method of making safety paper. Burgess W. Smith, assignor to The Todd Company, Inc., Rochester, N. Y. Filed Aug. 25, 1932. 5 claims. (Cl. 91-67.95).

2,032,845. Adhesive tape. Ferdinand W. Humphner, assignor to Mid-States Gummed Paper Company, a corporation of Illinois. Filed Dec. 7, 1931. 1 claim. (Cl. 91-68). The tape contains a bare metallic coating on one side.

2,032,870. Apparatus for making paper containers. Herbert Cross, Cynwyd, and Everett E. Bussey, Philadelphia, Pa. Filed Sept. 24, 1934. 9 claims. (Cl. 93-39).

2,032,099. Material for use as a leather substitute and method of making same. Albert J. Hanley and Roland B. Respess, assignors to Respro, Inc., Cranston, R. I. Filed July 29, 1933. 2 claims. (Cl. 91-68). A fibrous sheet impregnated with rubber and coated with a rubber compound containing a blowing agent and short length fibers; this is heated, vulcanized and coated with a surface layer or layers.

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2,033,123. Method and apparatus for refining paper stock. Edwin Cowles, assignor to Cowles Engineering Corporation, Sewaren, N. J. Filed May 17, 1934. 7 claims. (Cl. 92-20).

2,033,124. Acoustical fiberboard and method of forming same. James N. Devereux, Greenville, Miss. Filed Aug. 9, 1933. 4 claims. (Cl. 92-38). Short fibers are first felted to form a strengthening back mat and long fibers are then assimilated to form the major portion of the thickness of the board and drying without pressure.

2,033,170. Production of coated fabrics. Cornelius A. Alt, Edgar H. Nollau, and Donald A. Rankin, assignors to E. I. du Pont de Nemours and Company, Wilmington, Del. Filed Aug. 25, 1932. 8 claims. (Cl. 91-68).

2,033,325. Flooring material. Albert L. Clapp, assignor to The Patent and Licensing Corporation, New York, N. Y. Filed March 26, 1932. 5 claims. (Cl. 154-49).

2,033,351. Process of manufacture of paper. Harry Huet Nelson, Paris, and Guillaume Becker, Asnieres, France. Filed July 13, 1934. 5 claims. (Cl. 92-21). Cellulosic pulp is sized and impregnated with cellulose thixotrope (from cellulose sulfocarbonate and bisulphite).

2,033,379. Doctor or smoothing blade for treating coated paper. Russell L. Jenkins and Thomas S. Foley, assignors to Swann Research Incorporated, Anniston, Ala. Filed Feb. 18, 1933. 1 claim. (Cl. 91-53).

2,033,452. Process for the chemical stabilization of paper and product. Otto J. Schierholtz, assignor to Ontario Research Foundation, Toronto, Canada. Filed Dec. 10, 1934. 11 claims. (Cl. 92-40). A non-tarnishing paper is produced by impregnating it with an alkaline earth metal bicarbonate.

2,033,481. Paper manufacture. George A. Richter, assignor to Brown Company, Berlin, N. H. Filed Nov. 15, 1933. 6 claims. (Cl. 91-68). Paper of high absorbency, porosity and wet strength contains a hydroxy ether of cellulose as thin films deposited on and integrating through its fibers.

2,033,485. Waterlaid felt. Milton O. Schur and Walter L. Hearn, assignors to Brown Company, Berlin, N. H. Filed Nov. 19, 1932. 2 claims. (Cl. 92-3). A blend of substantially unhydrated but alkali-refined pulp (90% alpha cellulose) and of beaten and hydrated but unrefined rag half stuff in amount up to 50% of the dry weight of the blend.

2,033,486. Artificial leather manufacture. Milton O. Schur, assignor to Brown Company, Berlin, N. H. Filed Nov. 14, 1931. 8 claims. (Cl. 91-68). Fibrous sheet impregnated with rubber latex solids and containing some glycerine.

2,033,488. Manufacture of roofing elements. John C. Sherman, assignor to Brown Company, Berlin, N. H. Filed June 10, 1932. 9 claims. (Cl. 108-8). Asphalted-impregnated shingle.

2,033,782. Cellulose treatment. William D. Nicoll, assignor to E. I. du Pont de Nemours and Company, Wilmington, Del. Filed June 27, 1934. 16 claims. (Cl. 260-146). Method of reducing the solution viscosity of cellulose, in which the cellulose is treated with 0.05% mineral acid, separating excess of acid and drying the cellulose at about 100° C.

2,033,791. Moistureproof cigarette and process of making same. Nathan Sulzberger, New York, N. Y. Filed May 13, 1932. 17 claims. (Cl. 131-52). Cigarette paper is impregnated with nitrocellulose and paraffine.

2,033,885. Impregnating pitch and process and product utilizing it. Ira H. Derby, assignor to Peter C. Reilly, Indianapolis, Ind. Filed Dec. 18, 1931. 3 claims. (Cl. 91-68). Cellulose fibrous material is impregnated with water-gas-tar pitch containing 0.2 to 10% of phenolic tar-acid.

MARCH 17, 1936

2,033,954. Paper manufacture. Harold Robert Rafton, assignor to Raffold Process Corporation, Andover, Mass. Filed Jan. 26, 1932. 6 claims. Calcium carbonate magnesium basic carbonate filler.

2,033,990. Felt conditioning machine. Charles H. Manton, Philadelphia, Pa. Filed Feb. 25, 1925. 2 claims. (Cl. 92-50). Washing apparatus for cleaning a moving band of felt.

2,033,991. Coating apparatus. Romie L. Melton and Raymond C. Benner, assignors to The Carborundum Corporation, Niagara Falls, N. Y. Filed July 9, 1935. 8 claims. (Cl. 91-18). Manufacture of abrasive paper.

2,033,997. Method of making carrying bags. George W. Poppe, assignor to Equitable Paper Bag Co., Inc., Brooklyn, N. Y. Filed May 5, 1934. 6 claims. (Cl. 93-35).

2,034,232. Apparatus for producing safety paper. William H. Grogan and Frank C. Ladd, assignors to Keith Paper Company, Turner Falls, Mass. Filed Sept. 13, 1933. 3 claims. (Cl. 92-40). Apparatus for incorporating planchets in a paper web during its formation on the fourdrinier wire.

2,034,308. Marked material. Willard Leroy Morgan, assignor to Sylvania Industrial Corporation, New York, N. Y. Filed May 25, 1933. 3 claims. (Cl. 91-67.9). A thin, transparent flexible sheet of regenerated cellulose having indicia thereon.

2,034,402. Head-box construction. Ernest A. Leloff, assignor to Northwest Paper Company, Cloquet, Minn. Filed Dec. 13, 1933. 19 claims. (Cl. 92-44).

2,034,421. Apparatus for imparting stretchability to webs. William Wallace Rowe and Warren A. Morris, assignors to The Paper Service Company, Lockland, Ohio. Filed July 15, 1932. 19 claims. (Cl. 154-30). Corrugating apparatus.

2,034,435. Coated paper. Clark C. Heritage, assignor to Oxford Paper Company, New York, N. Y. Filed April 10, 1933. 6 claims. (Cl. 91-68). A base pigment, lime and water are mixed, an alum added, followed by an alkali and an adhesive.

2,034,522. Fireproof building material. Emil C. Loetscher, Dubuque, Iowa. Filed Feb. 19, 1934. 8 claims. (Cl. 154-45.9). An asbestos-resin-silicate board.

2,034,627. Corrugated liner. Donald E. Lower, Aspers, Pa., and Michael Paul Roche, Baltimore, Md. Filed Sept. 19, 1934. 7 claims. (Cl. 217-3).

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R19,903. Roofing material. Norman P. Harshberger, assignor to Bakelite Building Products Co., Inc., New York, N. Y. Original No. 1,900,861, dated March 7, 1933. Application for reissue Feb. 11, 1935. 19 claims. (Cl. 108-7).

2,034,771. Method of folding towels. Joseph P. Remington, assignor to Stokes and Smith Company, Philadelphia, Pa. Filed Dec. 28,1931. 9 claims. (Cl. 270-67).

2,034,833. Method of treating organic waste liquors. Erik Ludvig Rinman, Djursholm, Sweden. Filed Sept. 19, 1934. 6 claims. (Cl. 202-34). Black liquor is treated with barium and calcium oxides in such a way that a dry residue results, which is subjected to dry distillation.

2,034,908. Log debarking cutter head. Arthur M. Kirkwood, Portland, Oregon. Filed Aug. 3, 1931. 6 claims. (Cl. 144-218).

2,035,024. Manufacture of paper for toweling and other purposes. Milton O. Shur, assignor to Brown Company, Berlin, N. H. Filed April 6, 1931. 6 claims. (Cl. 91-68). Method of treating paper web with glue and tanning agent.

2,035,122. Articles fabricated with asphaltenes and method of making such articles. Stewart C. Fulton and Vladimir Kalichevsky, assignors to Standard Oil Development Company, New York, N. Y. Filed Dec. 12, 1931. 12 claims. (Cl. 154-2). Wall board is impregnated with asphaltenes.

2,035,320. Method of manufacturing cellulose tubes. Harry F. Kniesche, assignor to Joseph Shapiro, Baltimore, Md. Filed March 5, 1934. 2 claims. (Cl. 93-80).

2,035,369. Shingle. Norman P. Harshberger, assignor to Bakelite Building Products Co., Inc., New York, N. Y. Filed March 14, 1931. 20 claims. (Cl. 108-7).

2,035,370. Shingle. Norman P. Harshberger, assignor to Bakelite Building Products Co., Inc., New York, N. Y. Filed May 29, 1931. 8 claims. (Cl. 108-7).

MARCH 31, 1936

2,035,447. System of pulp preparation. Charles D. Altick, Dayton, Ohio. Filed July 27, 1934. 13 claims. (Cl. 92-6). Method of saturating pulp with a liquid and passing it through a refiner.

2,035,495. Plastic board forming device. Claude B. Mills, assignor to United States Gypsum Company, Chicago, Ill. Filed April 27, 1934. 8 claims. (Cl. 154-1). Method of smoothing board and forming edges thereof.

2,035,552. Blank-making machine. Cutler D. Knowlton, assignor to Hoague-Sprague Corporation, Lynn, Mass. Filed Nov. 22, 1933. 10 claims. (Cl. 93-36).

2,035,760. Decorative material. Thomas S. Reese, Cleveland, Ohio. Filed Sept. 17, 1934. 5 claims. (Cl. 41-26). Basis is an asphaltum board with surface of latex paper.

2,035,761. Synthetic veneer and process of making same. Thomas S. Reese, Cleveland, Ohio. Filed Sept. 17, 1934. 5 claims. (Cl. 41-26). The synthetic veneer consists of fiber board having a surfacer thereon.

2,035,768. Transfer paper and method of making same. John Q. Sherman, Albert W. Metzner and John E. Frey, Dayton, Ohio; said Metzner and said Frey assignors to said Sherman. Filed Feb. 20, 1933. 3 claims. (Cl. 91-68).

2,035,857. Automatic carton forming and stacking machine. Frank W. Adsit, assignor to Rotary Carton Machine Company, Minneapolis, Minn. Filed Dec. 8, 1932. 15 claims. (Cl. 93-58).

2,035,884. Composite flooring material. Harold C. Harvey, assignor to The Agasote Millboard Company, Ewing Township, N. J. Filed Jan. 24, 1935. 2 claims. (Cl. 154-49). Fiber board is the base.

2,035,921. Building material. Robert G. Quinn, assignor to International Paper Company, New York, N. Y. Filed March 6, 1934. 5 claims. (Cl. 108-8). Bark coated bast fibers individually coated with bitumen, covered with bituminous waterproofing material.

2,035,994. Fiber refining and refiner. Daniel Manson Sutherland, Jr., Morrisville, Pa. Filed Oct. 3, 1934. 38 claims. (Cl. 92-26).

2,036,051. Indented shock absorbing cushioning or packing paper and method and apparatus for making same. John E. Kieffer, Ewing, Ind. Filed April 7, 1934. 10 claims. (Cl. 154-33).

2,036,156. Hard products and method of making same. Thor Axel Ivar Lundbäch, assignor to Aktiebolaget Mo Och Domsjö Wallboard Company, Ornskoldsvik, Sweden. Filed March 1, 1933. 5 claims. (Cl. 92-21).

2,036,168. Paper machine and process of making paper. George A. Engert and George B. Gibson, assignors to The Sonbert Machine Company, Chicago, Ill. Filed Jan. 18, 1934. 31 claims. (Cl. 92-38). Feeding apparatus for de-liquefying machines.

Occurrence of Compression Wood in Black Spruce and Its Effect on Properties of Ground Wood Pulp*

By M. Y. Pillow[1] E. R. Schaefer[2] and J. C. Pew[3]

Abstract

The study indicates that the presence of compression wood has a deleterious effect on the properties of groundwood pulp and should be taken into consideration in the manufacture of certain specialized products.

The experimental grinder runs show that pulpwood containing large amounts of compression wood produces larger amounts of small fiber fragments than does wood relatively free from compression wood. If the wood is ground when green, fewer of the very fine fragments are produced than if ground after about one year's seasoning. Pulp made from compression wood is lower in strength than that made from normal wood. Although the fiber length is only one of the factors upon which the strength of groundwood pulp is dependent, the comparable conditions under which the experimental pulps were produced indicates that the proportions of fine and coarse fiber fragments in these pulps are largely responsible for their strength characteristics.

Compression wood is readily recognized with a little experience and may be reduced in quantity or eliminated entirely by sorting logs in the woods or at the mill. It may also be reduced to a minimum by selecting wood prior to felling from stands where it is least abundant.

Recently it was noted that mechanical pulp produced from an abnormal type of wood called "compression wood" was decidedly lacking in strength and generally unsatisfactory for the purpose for which intended. In order to check these observations further experiments were made at the Forest Products Laboratory to determine the effect of compression wood on the properties of groundwood pulp. The results of the experiments are reported here.

Characteristics of Compression Wood

Compression wood occurs among all coniferous species. It is formed on the lower sides of leaning trunks and of branches and is distinguishable by eccentric annual growth rings and unusually large percentages of summer wood in the wider portions of these rings. In freshly cut spruce pulpwood compression wood can be identified in addition to the foregoing characteristics by its darker color (Fig. 1). As the wood loses moisture the color differences between compression wood and normal wood become less apparent. But on rewetting as when pulpwood is placed in a hot pond the compression wood assumes an even more distinct reddish brown color. Compression wood may be confined to relatively few annual rings, or it may comprise approximately one-third to one-half of a cross section.

Compression wood fibers are approximately 70 to 80 per cent of the length of normal wood fibers. The thickness of the cell walls of summer wood of compression wood is approximately the same as that of normal wood, but the cell cavities are somewhat larger. Consequently the density of the summer wood of compression wood is slightly lower than that or normal summer wood. The density of a piece of wood composed of compression wood, however, is higher than one composed of normal wood because of the greater proportion of summer wood in the compression wood.

Microscopically compression wood is distinguished by circular shaped summerwood fibers when viewed on a cross sectional area as compared to nearly rectangular shaped fibers of normal wood. Intercellular spaces commonly occur at the junction of fibers (Fig. 2). Longitudinal sections of compression wood fibers are distinguished by spirally oriented checks in the cell wall (Fig. 3).

Compression wood occurs in all types from that which is readily identified as abnormal wood at a glance to that which can be identified only by careful microscopical examination. Two broad types of compression wood are recognized, pronounced compression wood and mild compression wood.

Occurrence of Compression Wood

Investigation at the Forest Products Laboratory have shown that the percentage of trees forming compression

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* Presented at the Annual Meeting of the Technical Association of the Pulp and Paper Industry, Waldorf-Astoria Hotel, New York, N. Y., Feb. 17 to 20, 1936.

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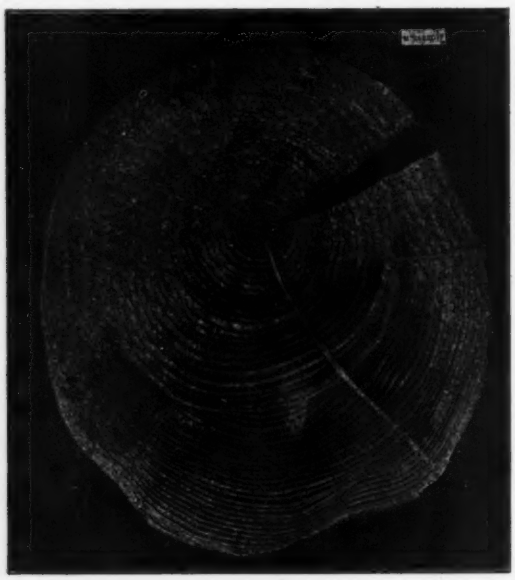

FIG. 1

Cross section of black spruce pulpwood showing pronounced compression wood in the lower portion.

wood increases as the vigor or the amount of inclination of individual trees increases. Thus a greater percentage of fast growing trees of a given species form compression wood than of relatively slowly growing trees which lean similar amounts. Likewise, trees which lean large amounts more frequently form compression wood than those that are only slightly inclined.

Compression wood is most commonly found in the lower portions of trees. Examinations of pulpwood from two stands of black spruce showed that about 80 and 60 per cent, respectively, of the trees had compression wood at the stump height. At the top of the first 8-foot pulpwood stick only about 25 per cent of the trees from both stands had compression wood. Above this height the percentage decreased to 10 per cent or less. Not only was there a greater amount of compression wood in the lower portions of the trees but it was also more pronounced in type.

The first of the foregoing spruce stands had grown under an older stand of tamarack and cedar that had subsequently been removed. Because of competition for light under the old stand and probably because of falling trees either as the result of logging or tipping by the wind, many of the spruce trees had become inclined, particularly in the lower portions of the trees, when relatively small. In this stand about 55 per cent of the trees had formed large amounts of pronounced compression wood at and for 2 to 5 feet above stump height. In comparison, the other stand, which had developed in an open swampy area, had formed large amounts of pronounced compression wood in the lower portions of the trees in only about 30 per cent of the trees.

Examination of these and other pulpwood stands have shown that the characteristics of the stands, particularly as regards growth conditions and straightness of the trees, is indicative of the relative amounts of compression wood. A stand in which many of the trees are inclined, irregularly spaced, and their trunks crooked or bowed, is an indication that larger amounts of compression wood are present than in one composed of straight, erect, and evenly spaced trees.

Pulping Characteristics of Compression Wood in Black Spruce

In order to obtain information on the characteristics of groundwood pulp made from wood containing large amounts of compression wood, three experimental grinder runs were made as follows: (1) On green wood almost entirely free from compression wood; (2) on green wood with large amounts of compression wood; (3) on dried wood with large amounts of very pronounced compression wood. A commercially produced pulp, satisfactory for the production of paper plates, was used for comparison. This pulp consisted of groundwood spruce pulp and refined screen rejections.

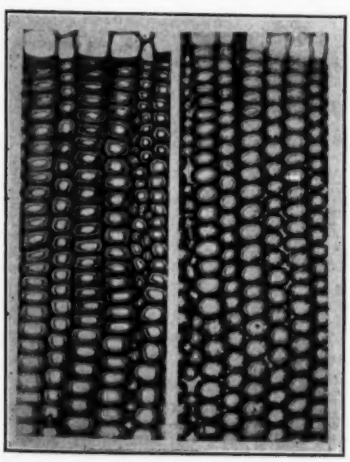

FIG. 2

Photomicrograph of transverse section of: (a) normal wood and (b) compression wood. Note intercellular spaces and circular cross sectional shape of the summerwood cells of compression wood.

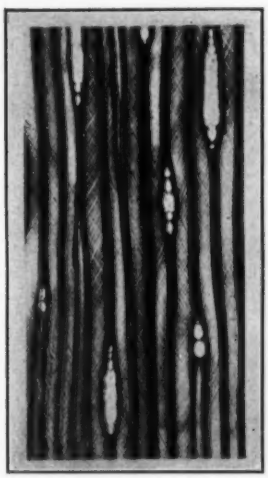

FIG. 3

Photomicrograph of longitudinal section of compression wood showing typical summer wood cells with spirally oriented checks in the cell wall.

The two pulps produced from wood containing compression wood had larger proportions of fine fiber fragments than did the pulps made from wood free from compression wood or the commercial pulp. As would be expected with a greater proportion of short fibers, the freeness values of the compression wood pulps were lower than that of the commercial pulp. In addition, the strength qualities of the compression wood pulps were lower than those of the other two pulps.

Table I gives the proportion of relatively fine and coarse fiber fragments and certain strength properties of the four pulps examined. It may be noted that the dried pulpwood containing compression wood produced the greatest amount of fine fiber fragments. About 75 per cent of the total pulp thus obtained passed through a 150-mesh screen, whereas about 57 per cent of compression wood ground when green passed through the 150-mesh screen. About 46 per cent of the green wood free from compression wood passed through the 150-mesh screen. Only about 3 and 4 per cent, respectively, of the total amount of pulp from dried and

TABLE I

SCREEN ANALYSIS AND STRENGTH OF GROUNDWOOD PULPS FROM BLACK SPRUCE BOTH CONTAINING AND FREE FROM COMPRESSION WOOD

Source of Pulp	Screened fractions of total amount of pulp: Retained on 24-mesh, per cent	Retained between: 24 and 42-mesh, per cent	Retained between: 42 and 80-mesh, per cent	Retained between: 80 and 150-mesh, per cent	Passing through 150-mesh, per cent	Strength properties of pulp test sheets: Tearing per pound per ream, grams	Bursting per pound per ream, points	Tensile per square inch, pounds
Commercial pulp.....	20.1	10.6	13.8	15.0	40.4	0.80	0.25	1072
Green wood free from compression wood ..	15.4	10.0	13.5	15.1	46.0	.84	.30	1512
Green wood with compression wood	4.3	6.8	12.5	19.6	56.8	.64	.15	781
Dried wood with compression wood	3.0	4.7	6.3	11.8	74.2	.60	.13	951

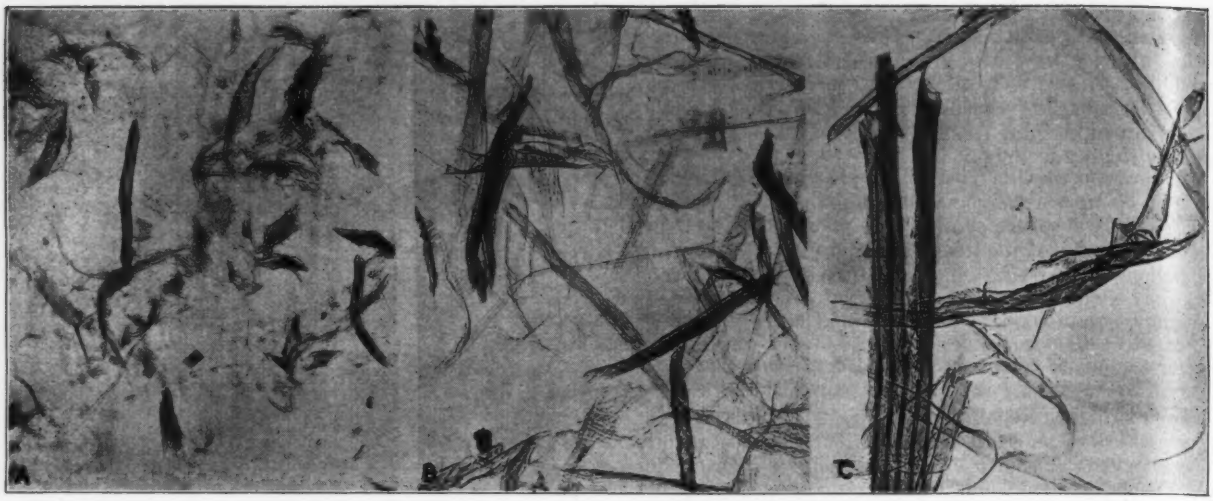

FIG. 4

Photomicrographs of ground wood pulp made from dried wood containing compression wood. A, fiber fractions passing through 150-mesh screen; B, retained between 80 and 150-mesh screen; C, retained between 42 and 80 mesh screen.

green compression wood was retained on a 24-mesh screen in comparison with about 15 per cent from wood free from compression wood. A higher percentage (20.1 per cent) and a smaller percentage (40.4 per cent) passed through the 150-mesh screen than of any of the experimentally ground pulps.

Microscopical examination of the fractions retained on the various screens showed that most of the compression wood fiber fragments passed through the coarser screens. When it had been ground in the dry condition only very few compression wood fragments were found to be of the commercial pulp was retained on the 24-mesh screen retained between the 42 and 80-mesh screen. When ground in the green condition occasional compression wood fiber fragments were found to be retained between the 24 and 42-mesh screen. Many compression wood fiber fragments were found in the fractions retained on and passing through the 150-mesh screen.

These observations, together with the screen analysis data, indicate that the structure of the compression wood fibers is such that they break into small fragments relatively easily. Other work on the mechanical properties of compression wood has shown that the cells break across on lines parallel to the checks shown in Fig. 3. Apparently as a result of the tearing action of the grinding stone, pulps from compression wood contain large proportions of small fragments. See table I and Fig. 4.

Proper Feed-Water and Boiler-Water Conditioning for High Pressure Boilers*

By E. W. Butzler[1]

For the past fifteen years the trend has been to higher steam pressures. Engineers have found this advisable in order to improve the plant cycle efficiency. To compensate for the increased cost of the higher steam pressure, it has been necessary to use fewer boiler units and to design these for higher rates of steam generation per square foot of surface.

While the mechanical problems in the design and operation of high-pressure, high-rating boilers have been worked out quite adequately, the new and serious problems in the conditioning of water for boilers operating under these severe conditions have not generally been recognized. With the rather considerable increase in temperature of the boiler water, resulting from the higher pressures and from the increased rate of heat absorption per square foot of surface, the old problems of scale formation, corrosion, metal cracking, and carry-over have become increasingly difficult to solve.

The great progress made by the mechanical engineer in boiler design has necessitated equally great development by the chemist in the proper conditioning of the water which these boilers must convert into usable steam.

The Necessity for Scale-Free Evaporative Surface

The necessity for scale-free evaporative surfaces for the successful operation of the modern boiler is apparent when the effects of the higher pressures and ratings on the tube temperature are considered. The safe maximum continuous tube temperature for ordinary carbon steel is generally agreed to be not greater than 900 deg. F., and may probably be lower. The temperature of the outer surface of a tube is the sum of the temperature of the water in the tube and the temperature drop through the tube wall. The temperature of the water increases with the pressure. The temperature drop through the tube wall increases with the thickness of the wall and the rate of heat absorption. Fig. 1 shows the temperatures corresponding to various pressures. Fig. 2 shows the temperature drop through tube walls of various thicknesses for various rates of heat absorption.

To show what the curves in Figs. 1 and 2 mean, let us assume a boiler operating at 1200 pounds per square

* Presented at the Annual Meeting of the Technical Association of the Pulp and Paper Inudstry, Waldorf-Astoria Hotel, New York, N. Y., Feb. 17 to 20, 1936.

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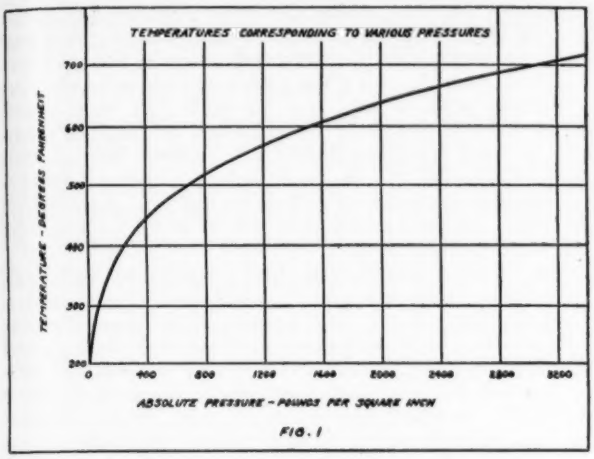


FIG. 1

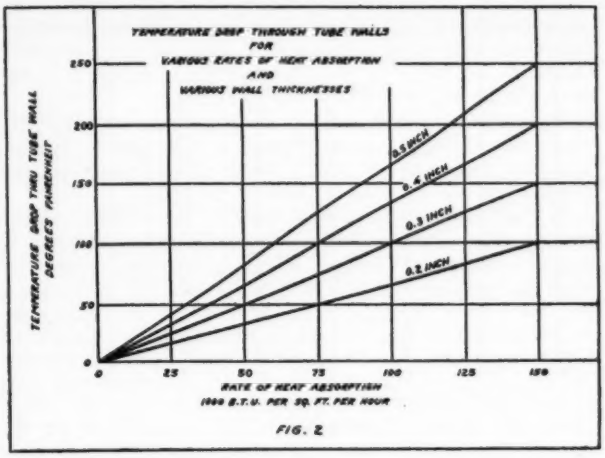


FIG. 2

inch, the rate of heat absorption of the front bank of tubes to be 150,000 B.t.u. per square foot per hour, and the wall thickness of the tubes 0.4 inches. From Fig. 1, the temperature of the water will be 567 deg. F., and from Fig. 2 the drop through the tube wall will be 200 deg. F., making the temperature of the outer surface of the tube 767 deg. F. This is below the safe maximum continuous tube temperature, but not by any great margin.

Let us next examine Fig. 3, which shows the temperature drop through 0.01 inches of scale of various conductivities at various rates of heat absorption. Assuming the rate of heat absorption to be 150,000 B.t.u. per square foot per hour, and the conductivity of the scale to be 8 B.t.u. per square foot per hour per deg. F. per inch, the temperature drop through the scale will be 188 deg. F. With 0.01 inches of scale present on the tube considered above, the temperature of the outer surface of the tube would be increased from 767 deg. F. to 955 deg. F. At this temperature the tube might be expected to fail due to overheating. Fig. 4 is a composite of Figs. 1, 2, and 3, and shows the combined effect of a high rate of heat absorption and scale on the temperature of the external surface of a tube. With increase in pressure the tube temperature may reach or exceed a safe value if even a very slight amount of scale is formed.

The importance of considering improvement in water-conditioning as an essential factor in any prospective installation of higher pressure units may be illustrated by two case histories.

Back in 1928, before the importance of systematic boiler-water conditioning was generally recognized, an industrial plant located near Pittsburgh installed a new 450-pound pressure boiler to replace a number of low-pressure, low-efficiency units. The feed water at this plant was 100 per cent well water of approximately 25 grains per gallon hardness, pretreated in an obsolete model hot continuous lime-soda softener. For the low-pressure boilers this low-quality feed water was fairly satisfactory. Scale formed on the evaporative surfaces and reduced efficiency, but no serious number of tube losses resulted.

When the new high-pressure boiler was placed in operation, the same low-quality feed water was used in it. Within three or four days sufficient scale had deposited on the evaporative surfaces of the boiler to cause overheating and failure of the lower row of tubes. New tubes replaced the damaged ones, and the boiler was returned to service. Another three or four days elapsed and the lower row of tubes failed again. By this time the news of the tube failures had spread, and very shortly the plant was beseiged by an army of compound salesmen. One of them induced the plant engineer to discontinue the use of the softener and in its place use a compound, supposedly concocted from colloidal organic material, to treat the feed water. Following this change in treatment the boiler was returned to service, and in less time than before it was necessary to take it off the line to replace damaged tubes.

Finally, the plant engineer realized that the situation was intolerable, and decided that systematic water-conditioning must be instituted at the plant. The softener was recon-

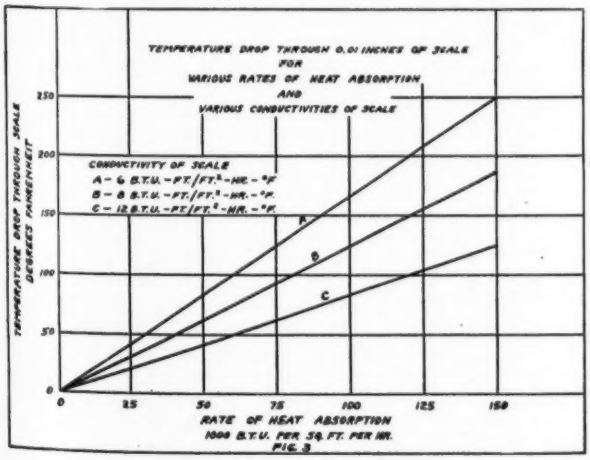
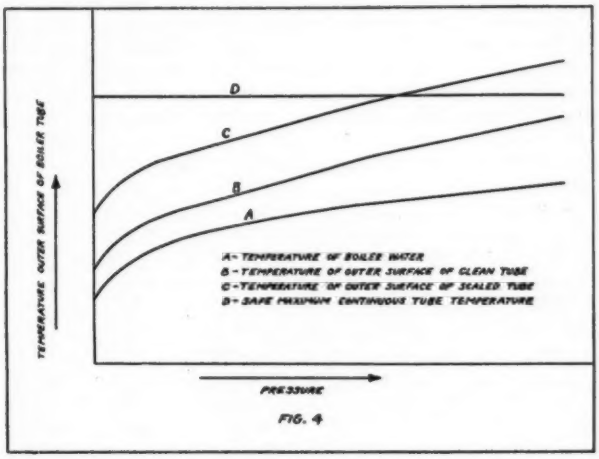


FIG. 3


TEMPERATURE OUTER SURFACE OF BOILER TUBE
D
C
B
A
A - TEMPERATURE OF BOILER WATER
B - TEMPERATURE OF OUTER SURFACE OF CLEAN TUBE
C - TEMPERATURE OF OUTER SURFACE OF SCALED TUBE
D - SAFE MAXIMUM CONTINUOUS TUBE TEMPERATURE
PRESSURE
FIG. 4

ditioned and operated under exact chemical control. Primary treatment in the softener was followed by secondary treatment with phosphate, with control of the phosphate based on maintaining definite chemical equilibria at the evaporative surfaces of the boiler.

Approximately seven years have passed since systematic water-conditioning was instituted at this plant. During that time there has not been a single tube replacement, nor has it been necessary to turbine the boiler.

The case of another plant, located in Northern Ohio, shows clearly the importance that is now attached to proper water-conditioning. Three years ago, when this plant contemplated installation of a single unit to generate 300,000 pounds of steam per hour at 800 pounds gauge using 50 per cent make-up, one of the first things considered was how to condition the feed water to insure continuity of operation of the new unit. Careful consideration was given to the method of softening the water. The softening plant was installed and operated in connection with the low-pressure boilers a year before the new boiler unit went into operation in order that the operators might become thoroughly familiar with its operation. Phosphate conditioning under exact chemical control was used from the first day the boiler went into service. The result has been that after 24 months' operation there has not been a single unscheduled outage of the boiler due to faulty water conditioning.

Prevention of Scale Formation in the Modern Boiler

While 400 or 450 pounds per square inch was considered high pressure several years ago, today we think of this as fairly low pressure, and mention of high pressure brings to mind 600, 900, 1400 pounds per square inch or higher. So far as the problem of scale formation is concerned, the higher pressures alone present no serious difficulties, providing phosphate is used for controlling the chemical equilibria at the evaporative surfaces. The effectiveness of phosphate in preventing scale formation has been demonstrated in boilers operating up to 1665 pounds per square inch. This pressure corresponds to a temperature of 610 deg. F. The temperature at critical pressure, 3226 pounds per square inch, is 706 deg. F. Since temperature and not pressure is the important factor to be considered in the chemistry of scale prevention, there is no reason why the relatively small temperature increment of 96 deg. F., between 1665 pounds per square inch, and the critical pressure should present any difficulties.

In the development of the modern boiler, however, the rate of steam generation per square foot of surface has been increased along with the pressure. Ratings of 200 or 250 per cent were once considered high. Today ratings corresponding to 500 to 700 per cent are not uncommon. These ratings refer to the average ratings, taking into account all of the heating surface of the boiler. There are certain points in the water-wall tubes and the front row of boiler tubes that are in direct line of radiation from the furnace, where the heat transfer per square foot of surface may approximate 150,000 B.t.u. per square foot per hour, which corresponds to a rating of about 5000 per cent. It is at these points of high rates of steam generation that a new type of scale has been found. It has been identified by chemical and microscopic analyses as sodium-aluminum-silicate, having the formula Na_2O-Al_2O_3-$4SiO_2$. In Table I are analyses of sodium-aluminum-silicate scales. These scales are characterized by high percentages of alumina (Al_2O_3) and sodium oxide (Na_2O).

TABLE I.—SODIUM-ALUMINUM-SILICATE SCALES.

	Analyses in Per Cent			
Type of Boiler	Bent Tube	Cross Drum	Cross Drum	Cross Drum
Operating Pressure	1650	650	400	400
Location of Scale	Water Wall	Water Wall	Bottom Tubes	Bottom Tubes
Sulphur Trioxide (SO_3)	3.9	0.4	1.0	Trace
Carbon Dioxide (CO_2)	Trace	...	Trace	Trace
Phosphorus Pentoxide (P_2O_5)	13.8	16.7	1.5	10.3
Silica (SiO_2)	21.4	27.6	52.6	30.8
Ferric Oxide (Fe_2O_3)	9.1	5.2	6.6	12.6
Aluminum Oxide (Al_2O_3)	19.4	14.0	18.2	8.9
Calcium Oxide (CaO)	6.3	16.5	3.2	11.7
Magnesium Oxide (MgO)	3.5	3.6	2.2	3.4
Sodium Oxide (Na_2O)	17.8	10.8	7.9	15.2
Ignition Loss	6.8	6.2	7.9	6.1
Total	102.0	101.0	101.1	99.0

Due to the amphoteric characteristics of aluminum, phosphate cannot prevent the formation of sodium-aluminum-silicate scales, nor remove them once they are formed. In a neutral water phosphate will combine with aluminum to form insoluble aluminum phosphate. In alkaline water the aluminum phosphate dissolves, forming sodium phosphate and sodium aluminate. Since it is necessary for a boiler water to be alkaline, it is apparent that phosphate cannot be used for removing aluminum therefrom. Thus, once aluminum enters a boiler water, it cannot be prevented from combining with the silica present therein to form hard, adherent sodium-aluminum-silicate scale, and once formed this cannot be removed by the phosphate present in the boiler water. Sodium hydroxide slowly dissolves the scale once it is formed, but the better procedure is to prevent its formation.

How then can the formation of sodium-aluminum-silicate scale be prevented? If it were possible to completely eliminate aluminum and silica from the boiler water, this would be the answer to the problem. However, this is not possible practically, since even with the use of condensate returns and evaporated make-up for feed water, some aluminum and silica enter the boiler water as a result of condenser leakage and evaporator carry-over.

Sodium-aluminum-silicate has been found in boilers in which the aluminum and silica concentrations of the boiler water have been relatively low. On the other hand, this type of scale has not been found in some boilers in which the concentrations of aluminum and silica have been relatively high. It is therefore, quite apparent that there is another factor in addition to the presence of aluminum and silica in the boiler water that affects the formation of the sodium-aluminum-silicate scale. Our observations lead us to believe that local high concentration of boiler water at points of high ratio of rate of steam generation to rate of circulation may likely be the cause of the formation of the sodium-aluminum-silicate scale. If this is the case, the solution to the problem of preventing this type of scale can best be obtained through the cooperative efforts of the boiler designer and the chemist. Through such cooperation the services of the boiler designer thus become available to establish satisfactory relations between the rate of steam generation and the rate of circulation at the localized hardest-worked sections of the boiler. The chemist will establish and maintain conditions which will keep at a minimum the amounts of aluminum and silica entering the boiler.

Corrosion of Boiler Metal

For the successful operation of the modern boiler, it is just as important to protect the boiler metal from corrosion as it is to prevent the formation of scale on the evaporative surfaces. As the efficiency of water-conditioning methods has increased and boiler surfaces have been maintained freer of scale, it has become necessary to give more and more consideration to the problem of corrosion.

The mechanical engineer looks at the boiler as a perfectly solid, stable piece of equipment. The chemist looks

at it as something subject to continuous slow reaction between the water and the steel, the rate of the reaction being fundamentally affected by the composition of the water, and materially increased by increasing temperature.

The restraining influence that makes it possible to use boilers made of steel for long periods of time is a thin coating of iron oxide formed from and integral with the surfaces of the boiler. This coating acts as a protective barrier against direct reaction of the boiler metal with the boiler water.

THE PROTECTIVE EFFECT OF LOW ALKALINITY.

Fig. 5 shows schematically the tendency for iron and the iron oxide coating to dissolve at a given temperature when in contact with highly acid and alkaline solutions. The region lying between A and D represents the region of protection. Point A corresponds to a pH of 9.6 at room temperature and represents the minimum caustic concentration which assures protection. Point D represents the caustic concentration at which dissolution of the iron and iron oxide begins to occur due to caustic attack. The caustic concentration represented by D is considerably higher than any concentration imaginable for water in the boiler proper. This high concentration can obtain, however, in seams and other points where active circulation is prevented.

As the operating pressure is increased, the temperature is likewise increased and the region of protection AD decreases. Fig. 6 shows the effect of increased pressure on the region of protection.

The entire region of protection lies on the alkaline side of a pH of 9.6. Therefore, one of the essentials for protecting the boiler metal from corrosion is that the water in contact with it be alkaline. The desirable alkalinity to maintain in the boiler water is that corresponding to a point just slightly below the line AE. An alkalinity of 40 to 80 ppm. NaOH, corresponding to a pH of 11.0 to 11.3, has been found satisfactory for most operating conditions.

ELIMINATION OF OXYGEN FROM BOILER WATER.

Corrosion due to low pH is a relatively simple condition to correct; that resulting from the presence of oxygen in the feed water constitutes a more difficult problem. As long as the alkaline boiler water is in contact with the boiler surfaces, the protective oxide coating will be maintained and the reaction between the boiler metal and oxygen will be minimized. However, let a bubble of oxygen attach itself to the boiler surfaces and the whole effect of maintaining alkalinity in the boiler water will be destroyed, due to the fact that the portion of the metal

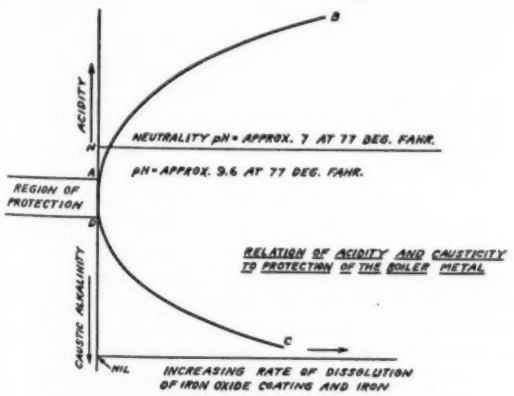


FIG. 5

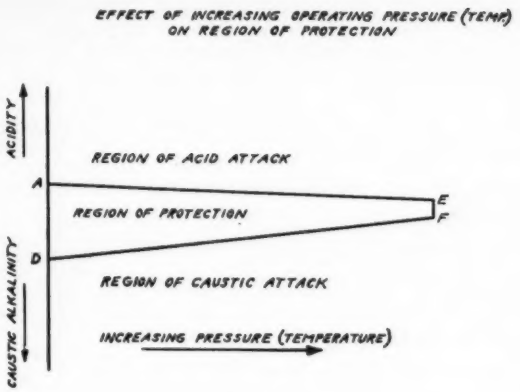


FIG. 6

underneath the bubble is no longer in contact with the alkaline boiler water and hence, pitting takes place at this point. It is therefore necessary that the degree of deaeration be sufficient, so that no matter how great the increase in temperature may be, oxygen bubbles will not form on the boiler surfaces.

The first step in the removal of oxygen from feed water is mechanical deaeration. All deaerating equipment operates on the basis of the partial-pressure law of Henry and Dalton, which states that the amount of oxygen dissolved in water in equilibrium with a vapor phase, is at all times proportional to the partial pressure of oxygen in the vapor phase. If the steam in contact with the water in a deaerating heater were entirely free of oxygen, and sufficient time were given for equilibrium to be attained, the water leaving the heater would be entirely free of oxygen. In practice, however, sufficient time cannot be given to permit equilibrium to be attained, since this would require considerably larger deaerating equipment than is now in use. Although this is the case, oxygen tests made on the heater effluent using the Winkler method have shown an apparent zero oxygen content. The reason for this is that the Winkler test is not sufficiently accurate to detect oxygen concentrations below approximately 0.04 ppm. Recent modifications by Schwartz and Gurney have improved the sensitivity of the Winkler method so that a concentration of oxygen as low as 0.007 ppm. can be detected. With the more sensitive test, oxygen can be found in the effluent of deaerating heaters that formerly showed zero oxygen by the regular Winkler test. The occurrence of corrosion in some boilers, and especially in the integral economizers of boilers where the water has been maintained alkaline and the oxygen concentration has been zero as determined by the regular Winkler test, may be attributed to the fact, that dissolved oxygen is still present.

The prevention of corrosion due to oxygen may be obtained by conditioning the water with a chemical that will fix the oxygen. There are a number of chemicals that can be used for this purpose, among them the tannic acid bodies, ferrous sulphate, ferrous hydroxide, finely-divided iron powder, and sodium sulphite. It requires quite a number of pounds of tannic acid bodies to combine with a pound of oxygen, and thus the cost of this treatment would be quite expensive. Furthermore, discoloration of the boiler water would result from their use. The use of iron salts to fix oxygen would produce heavy sludge in the boiler water, and therefore to this extent is not desirable. Sodium sulphite, on the other hand, combines with the oxygen to form sodium sulphate, which is desirable from the standpoint of maintaining the sodium sul-

phate-alkalinity ratios. It requires approximately 8 pounds of anhydrous sodium sulphite to combine with 1 pound of oxygen. Periodic checks for sodium sulphite concentration in the water can be made very easily, and thus it is possible to maintain definite, desired concentration of sodium sulphite in the water to give assurance against oxygen corrosion.

Boiler-Metal Cracking

The deterioration of boiler metal, characterized by cracking of the plates and rivets along submerged riveted seams, has been referred to as boiler-metal cracking, caustic embrittlement, or simply embrittlement. This type of failure is attributed to simultaneous chemical action and stress, especially cyclic stress.

Past investigations have indicated that high local stresses around rivet holes, and the presence of a highly concentrated solution of sodium hydroxide in the seams, were responsible for the cracking. A recent report of the cooperative investigation between the Joint Research Committee on Boiler Feed Water Studies and the United States Bureau of Mines, presented at the December meeting of A. S. M. E. in New York, has revealed that pure sodium hydroxide did not produce cracking in laboratory tests made under supposedly the same conditions which had caused rapid failure in earlier investigations. The reason for the apparent contradictory results was finally traced to the fact, that in earlier investigations a commercial grade of sodium hydroxide had been used as against a chemically pure grade in the case of the tests made at the Bureau of Mines. To W. C. Schroeder and A. A. Berk, of the Bureau of Mines, belong the credit for discovering that silica present in only small amounts in the commercial grade of sodium hydroxide was responsible for the much greater effect of this material in causing cracking.

Schroeder's and Berk's work showing the important effect of silica in promoting cracking of steel by sodium hydroxide has been substantiated by Professor F. G. Straub of the University of Illinois. The results of the former investigators have recently been published by the American Institute of Mining and Metallurgical Engineers.

Just what part the silica plays in conjunction with sodium hydroxide in causing cracking of steel is not known at the present time. It is possible that when this is known it may be necessary to revise some of the current views regarding caustic cracking. In the meantime the fact that silica is an almost universal constituent of boiler waters should be remembered.

At the present time the only recognized basis for inhibiting cracking in riveted seams is maintenance of the ratios between the sodium sulphate and total alkalinity recommended in the A. S. M. E. Boiler Code, which are based upon the results of power plant experience over a number of years. It is generally believed that sodium sulphate produces a protective effect against caustic attack by depositing as a covering scale on the metal surfaces in a seam as a result of the continued concentration of boiler water in the capillary spaces of the seam. Presumably some other salts similarly deposited from the boiler water would have the same protective effect.

To determine the conditions under which a given boiler water would actually deposit sodium sulphate or other sodium salts, was the first objective of the cooperative investigation between the Joint Research Committee on Boiler Feed Water Studies and the United States Bureau of Mines. The results of detailed studies of the mutual solubilities of sodium sulphate, sodium carbonate, sodium chloride, sodium phosphate, and sodium hydroxide over the temperature range of 302 to 662 deg. F., corresponding to absolute pressures for water of 70 to 2400 pounds per square inch, are being published at the present time. These data have previously been presented in the form of progress reports at recent annual meetings of the A. S. M. E.

It is hoped that a rational basis for controlling the components of a boiler water to prevent metal cracking may be developed from these data after completion of the current investigations to determine the limiting concentrations of sodium hydroxide and silica necessary to cause cracking. Until such time it is advisable to adhere to the recommendations of the A. S. M. E. Boiler Code.

Carry-Over

Carry-over of boiler water with the steam is generally attributed to either priming, foaming, or a combination of the two. A sudden large increase in load on a boiler may cause rapid decrease in pressure with the result that water will flash into steam with almost explosive violence, causing the water level to lift so that slugs of water will be carried into the steam. This is known as priming. The chemical condition of the boiler water is not a factor in this type of carry-over. The remedy for priming lies in better control of the mechanical conditions causing it or mechanical separation of the water from the steam.

When the surface conditions of the boiler water are such that the steam bubbles formed do not break rapidly, layers of bubbles build up in the steam drum to a point where some of them are carried along with the steam. This is known as foaming and may be eliminated by controlling the chemical conditions of the boiler water.

Successful operation of the modern boiler necessitates keeping it in continuous service over long periods of time. To make this possible, scale formation, corrosion, and metal cracking must be definitely prevented. Certain minimum concentrations of conditioning chemicals must be maintained in the boiler water to obtain these desired conditions. Any measures taken to control foaming must not interfere with the maintenance of these necessary minimum concentrations.

At one time it was the generally accepted opinion that foaming was primarily due to the presence of suspended material in the boiler water, and in its absence high concentrations of dissolved solids could be maintained without causing foaming. Later on it was definitely shown that concentration and type of dissolved solids in the boiler water were the primary cause of foaming, and that the presence of suspended material had little effect on the boiling characteristics of water when the dissolved solids concentration was relatively low.

There are certain types of dissolved solids that produce extremely bad boiling conditions. For example, a few parts per million of a soluble sodium salt of an organic fatty acid will cause more trouble due to foaming than several hundred parts per million of sodium sulphate or sodium chloride. Therefore, extreme care must be taken to prevent saponifiable material from contaminating the boiler water.

Next to saponifiable material, hydroxide appears to have more effect on the boiling characteristics of water than any other constituent of the boiler water. A certain minimum concentration of hydroxide is necessary for prevention of scale formation and corrosion. Greater concentration should be avoided because of its aggravation of any foaming tendency of the boiler water. Proper choice of the method of pretreating the make-up water and of conditioning chemicals for maintaining the desired chemi-

cal equilibria at the evaporative surfaces permit close control of boiler-water alkalinity.

With precautions taken to minimize or completely eliminate contamination of the boiler water by saponifiable material, and to maintain alkalinity at the necessary minimum concentration, sufficient blowdown should be given the boiler water to keep the total solids concentration below the point where foaming occurs. Reasonably low total solids concentration may be obtained by blowdown without any appreciable heat loss resulting therefrom by use of heat-recovery equipment in connection with continuous blowdown. With this type of equipment the only losses resulting from blowdown will be the cost of additional feed water required and the cost of the chemicals for conditioning this water.

Precepts of Proper Conditioning

In the preceding discussion emphasis has been placed in turn upon the individual problems of the prevention of scale formation, corrosion, metal cracking, and carry-over. The solution of any one of these problems by itself will not maintain a boiler on the line. In fact, concentrated emphasis upon one phase of boiler-water conditioning to the neglect of the others may only lead to an aggravation of operating difficulties. To maintain a high-pressure, high-rating boiler in service day after day, and month after month, requires a system of boiler-water conditioning in which adequate attention is given to each of the problems involved. Certain things must be done, others avoided; the well being of the boiler and its economic operation depend upon correctness in choice of water-conditioning procedure. The ten years' experience in water-conditioning, which has coincided with the period of rapid increase in boiler pressure and boiler rating has developed quite definite fundamental rules of procedure. A brief discussion of these rules will be given.

Raw Water.

The first factor that must be considered is the raw water. In some cases there are two or more sources of raw water available, as, for example, a river, a small stream flowing into the river, deep wells, and shallow wells. The river water may contain high concentrations of scale-forming materials and dissolved solids, while the stream flowing into it may be exceptionally pure water. The deep well water may have certain undesirable characteristics, while the shallow well water may not, or the reverse may be true. Granting that each of the various sources of raw water will be ample to meet the plant requirement, the one shown by chemical analysis to be most easily and economically prepared for use as boiler make-up should be chosen. The various waters available may range in quality from one having low concentrations of scale-forming materials and dissolved solids and requiring no pretreatment, to one having very high concentrations of sulphate and chloride, making the use of evaporators necessary or at least desirable. In between these extremes are waters that may be converted into satisfactory make-up by means of suitably adapted processes of pretreatment.

Pretreatment of Raw Water.

The next factor to be considered is the pretreatment of the raw water. Quite often the main consideration in choosing the method of pretreatment is to obtain a water of minimum concentration of scale-forming materials. This is wrong, as there are other conditions that must be met. The choice should be made to provide for prevention of corrosion in pre-boiler equipment, simplicity and certainty of control of boiler-water alkalinity, limitation of the total solids concentration of the boiler water, and of amounts of non-condensable gases in the steam.

The two most commonly used methods of pretreatment are the lime-soda process and the zeolite process. The lime-soda process is more generally adaptable to the pretreatment of water for use as boiler make-up than is the zeolite process. The lime-soda process provides a water of pH value that adequately protects the pre-boiler equipment, and further, by removing any bicarbonate in the raw water as sludge makes possible the maintenance of low, closely-controlled alkalinities in the boiler water and minimum carbon dioxide concentrations in the steam. The zeolite process, on the other hand, retains the bicarbonate of temporary hardness as sodium bicarbonate, and its effluent water will have a pH value less than 8. Thus, provisions must be made for increasing the pH value of the feed water, and for removing the sodium bicarbonate from the water in order to limit boiler-water alkalinity and the amount of carbon dioxide in the steam.

In the case of raw waters having little or no bicarbonate, either lime-soda or zeolite may be used, but with increase of bicarbonate content in the water the lime-soda process has many advantages over the zeolite process. Even in the case of no bicarbonate, the lime-soda process has the advantage in that it provides an effluent that has ample pH value to protect the pre-boiler equipment. The only advantage the zeolite process has over the lime-soda process is that of lower concentration of scale-forming materials in its effluent. This is relatively unimportant for the reason that whether the make-up water contains 0.5 or 1.0 grains per gallon, scale-forming materials makes no difference from the standpoint of scale prevention when phosphate is maintained in the boiler water to control the chemical equilibria at the evaporative surfaces.

Deaeration.

The prevention of corrosion requires careful control of pH value and elimination of oxygen. Proper choice of pretreatment will provide the necessary pH value to protect the pre-boiler equipment and boiler surfaces from corrosion. Elimination of oxygen is most economically obtained by removing the greater part of it mechanically in deaerating heaters operating in accordance with the Law of Henry and Dalton, and then removing the small amount of residual oxygen chemically by the use of sodium sulphite.

The removal of oxygen from water by chemical means should not be considered as a substitute for mechanical deaeration, but rather as a secondary line of defense following deaerating equipment.

Boiler Water.

With proper choice of pretreatment for the make-up water, boiler-water alkalinity can be maintained within low, closely-controlled limits. By low alkalinity is meant the minimum concentration compatible with economic use of phosphate and prevention of corrosion. With the alkalinity maintained at a minimum, the sodium sulphate required for the sodium sulphate-alkalinity ratio is likewise maintained at a minimum. This in turn means minimum total solids concentration in the boiler water, and less tendency for boiler water to carry over with the steam.

It would not be possible to maintain these low concentrations of alkalinity and total solids in the boiler water if it were not for the fact, that maintenance of phosphate radical at the evaporative surfaces, at very low alkalinity, will prevent scale formation for all pressures possible with water.

American Wringer Co. Joins TAPPI

The American Wringer Company, Inc., of Woonsocket, R. I., manufacturers of Tensilastic rubber-covered rolls for paper, textile and other industries, was organized in 1891 and has been in business continuously since then. While beginning business as a manufacturer of clothes wringers for household use, they have made and specialized in rubber-covered rolls for over forty years. In 1929 the wringer business was discontinued and they became interested wholly in rubber manufacture.

They have a thoroughly equipped and highly specialized laboratory under competent and experienced chemists, studying the problems relative to rubber covering of rolls for the industries they serve. The Tensilastic formula and control was the result of over five years of basic research work by this laboratory.

They have also a specialized engineering department in rubber-covered rolls. The service of both the laboratory and engineering staff together with the experience and records of over forty years are available to their customers. Any question relative to rubber-covered rolls will be gladly answered. They have available for distribution on application, service booklets for the paper manufacturers entitled "Use and Abuse of Rubber-Covered Rolls," and "Crown and Density of Rubber-Covered Rolls." Both are non-advertising. Also available is the booklet "Tensilastic, the Super Roll Covering," which describes this important improvement in rubber coverings.

On request they are prepared to address TAPPI or other meetings of the paper industry on the subject of rubber-covered rolls. These addresses are never used in any way to advertise rolls. These addresses are never used in any way to advertise their own products. They are simply offered with the sole purpose of helping to a better understanding of rubber roll problems.

The American Wringer Company will be represented in the Technical Association of the Pulp and Paper Industry by W. E. Brown, sales manager.

British Technical Proceedings Available

The Proceedings of the Technical Section of the Paper Makers' Association of Great Britain and Ireland, Vol. XVI, Part II (March, 1936) has just been issued. Its contents are as follows:

Second Report of the Pulp Evaluation Committee, by Arthur Baker.
New Suction Press Arrangements, by R. C. Heys.
Refractories; Their Composition, Properties and Applications, by D. Dixon.
China Clay, by R. J. Davies.
Factory Lighting, by R. O. Ackerley.
Prevention of Accidents in Paper Mills, by L. C. McNair.
Bearings and Their Lubrication, by H. Rawlinson.
The Curling of Paper, by J. Mc Laren.

Copies may be obtained from the Book Department of the Technical Association of the Pulp and Paper Industry, 122 E. 42nd street, New York, at $3 per copy postpaid.

Robert G. Quinn Gets Patent

GLENS FALLS, N. Y., April 14, 1936—Robert G. Quinn, of this city, has been granted a patent on his invention of a new building material composed of a fibrous body covered with bituminous waterproofing material. Commercial rights have been assigned to the International Paper Company. Application for patent has been pending several years, having been filed in 1933.

New TAPPI Members

The executive committee of the Technical Association of the Pulp and Paper Industry has elected to membership the following:

Trygve Iversen, kraft mill superintendent, Pacific Mills, Ltd., Ocean Falls, B. C. is a graduate of Carolinska Larovarket, Orebro, Sweden. Mr. Iversen was formerly superintendent of the Brown Corporation, La Tuque, P. Q.; the Wayagamac Company, Three Rivers, P. Q.; the Queensland Pine Company, Queensland, Australia; the Dryden Pulp Company, Dryden, Ont.; and the Vancouver Kraft Company, Port Mellon, B. C.

Donald K. Mac Bain, plant engineer, Pulp Division, Weyerhaeuser Timber Company, Longview, Wash. is a 1922 graduate of the University of Washington, and the Lewis Institute. He was formerly with the Crane Company, Seattle, Wash.; the Olympic Forest Products Company, Port Angeles, Wash.; and O. C. Schoenwerk, Winnetka, Ill.

Charles A. Southwick, Jr., package research, general Foods Corporation, New York, N. Y. is a 1928 graduate chemical engineer of the Massachusetts Institute of Technology and was formerly with the Hazel-Atlas Glass Company, Wheeling, W. Va.

William S. Taylor, salesman, American Cyanamid and Chemical Corporation, Kalamazoo, Mich. is a 1918 graduate of Kalamazoo College and was formerly purchasing agent for the Western Board and Paper Company, Kalamazoo, Mich.

Improved Paper Machinery Co. Joins TAPPI

The Improved Paper Machinery Company of Nashua, N. H., has become a company member of the Technical Association of the Pulp and Paper Industry.

This company with its well known Impco trademark has been serving the pulp and paper industry for forty years supplying excellent engineering services and such equipment as vacuum filters, washers and thickeners, pneumatic save-alls, water filters, knot screens, centrifugal screens, tailing screeners, non-sagging cylinder moulds, multiple stage deckers and washers and flat screens with the Dunbar drive.

The business officers are Walter L. Barker, president; John H. Noble, vice-president; Laura D. Carr, assistant to the president; and John P. Rich, secretary; all of whom are well known to the operating men of the paper industry. The Improved Paper Machinery Company will be represented by John P. Rich in TAPPI.

Cuba Experiments With Bagasse

Investigations along the line of producing cellulose fiber and insulating board from bagasse have been under way in Cuba recently according to a report from Assistant Commercial Attache Charles H. Ducote, at Habana.

Certain interests some time ago conducted experiments as to the suitability of bagasse as a base for chemical pulp. For various reasons not divulged, this work was discontinued. At the same time experiments were being carried on along the same lines by another group.

J. R. Booth Ltd. Move New York Office

J. R. Booth Limited, manufacturers of newsprint, Ottawa, Can., announce the removal of their New York sales office to the Graybar Building, 420 Lexington avenue. The new telephone numbers are MOhawk 4-0085 and 0086.

IMPORTS OF PAPER AND PAPER STOCK

NEW YORK, BOSTON, PHILADELPHIA AND OTHER PORTS

NEW YORK IMPORTS

WEEK ENDING APRIL 11, 1936

CIGARETTE PAPER

Suarez & Crespo, *Flint II,* Alicante, 3 cs.; Standard Products Corp., *Paris,* Havre, 12 cs.; Champagne Paper Corp., *Paris,* Havre, 110 cs.

WALL PAPER

S. K. Lonegren, *Gripsholm,* Gothenburg, 8 bxs.; F. J. Emmerich, *Andania,* Liverpool, 1 ble.

PAPER HANGINGS

W. H. S. Lloyd & Co., *American Farmer,* London, 13 bls., 5 cs.

WALL BOARD

Johaneson Wales & Sparre, Inc., *Gripsholm,* Gothenburg, 23 bdls.

NEWSPRINT

———, *Soloy,* Gefle, 104 rolls; Brooklyn Daily Times, *Svaneholm,* Norrkoeping, 360 rolls; Gilman Paper Co., *Svaneholm,* Hallstavik, 458 rolls; Lunham & Reeve, Inc., *Svaneholm,* Hango, 201 rolls; Jay Madden Corp., *Svaneholm,* Hango, 185 rolls; National Pulp & Paper Co., Inc., *Gripsholm,* Gothenburg, 278 rolls; S. B. Behrens Co., *Gripsholm,* Gothenburg, 82 rolls, 40 bls.; H. Reeve Angel & Co., Inc., *Cliffwood,* Helsingfors, 164 rolls; Jay Madden Corp., *Cliffwood,* Helsingfors, 708 rolls; ———, *Bergensfjord,* Oslo, 239 rolls; Perkins Goodwin & Co., *Hansa,* Hamburg, 620 rolls.

PRINTING PAPER

Dingelstedt & Co., *Europa,* Bremen, 115 cs.

WRAPPING PAPER

———, *Svaneholm,* Hango, 335 bls., 920 rolls; F. C. Strype, *Black Gull,* Antwerp, 6 cs.; Guaranty Trust Co., *Gripsholm,* Gothenburg, 1,573 rolls, 9 bls.; Wilkinson Bros., Inc., *Gripsholm,* Gothenburg, 6 rolls; E. Dietzgen & Co., *Hansa,* Bremen, 73 cs.

KRAFT PAPER

Parsons & Whittemore, Inc., *Gripsholm,* Gothenburg, 1,600 bls., 668 rolls.

DRAWING PAPER

Japan Paper Co., *American Farmer,* London, 2 cs.; H. Reeve Angel & Co., Inc., *Alaunia,* London, 12 cs.

FILTER PAPER

———, *American Farmer,* London, 1 cs.; H. Reeve Angel & Co., Inc., *Alaunia,* London, 14 cs.

FILTER COMPOUND

P. H. Petry & Co., *Hansa,* Hamburg, 100 bls.

BASIC PAPER

Dingelstedt & Co., *Europa,* Bremen, 6 cs.

TRANSFER PICTURES

Rohner Gehrig & Co., *Europa,* Bremen, 25 cs.

SURFACE COATED PAPER

Globe Shipping Co., *Hansa,* Hamburg, 1 cs.

METAL COATED PAPER

K. Pauli Co., *Hansa,* Bremen, 18 cs.

PHOTO PAPER

American Express Co., *Hansa,* Hamburg, 50 cs.

DECALCOMANIAS

Sellers Transportation Co., *Europa,* Bremen, 11 cs.; ———, *Europa,* Bremen, 3 cs.; Phoenix Shipping Co., *Hansa,* Hamburg, 2 cs.

COLORED PAPER

———, *Hansa,* Hamburg, 2 cs.

TISSUE PAPER

Jay Madden Corp., *Hansa,* Hamburg, 17 bbls., 1 cs.

STENCIL PAPER

Frankel Carbon & Ribbon Manfg. Co., *American Farmer,* London, 1 cs.; C. Happel, *Hansa,* Hamburg, 1 cs.

GUMMED PAPER

———, *Europa,* Bremen, 10 cs.

CARD BOARD

———, *Hansa,* Hamburg, 10 bls., 14 pkgs.

PAPER TUBES

———, *Hansa,* Hamburg, 29 pkgs.

PASTE BOARD

———, *Hansa,* Bremen, 50 cs.

MISCELLANEOUS PAPER

National Pulp & Paper Co., Inc., *Svaneholm,* Norrkoeping, 55 bdls., 2,500 rolls; ———, *Black Gull,* Antwerp, 12 cs.; National Pulp & Paper Co., Inc., *Gripsholm,* Gothenburg, 459 rolls; The Borregaard Co., Inc., *Gripsholm,* Gothenburg, 2,953 rolls, 483 bls.; Blauvelt Wiley Paper Manfg. Co., *Gripsholm,* Gothenburg, 140 rolls, 9 bls.; E. H. Sergent & Co., *Gripsholm,* Gothenburg, 12 cs.; Keller Dorian Paper Co., *Pr. Garfield,* Marseilles, 2 cs.; ———, *Paris,* Havre, 12 cs.; Coty Processing Co., *Paris,* Havre, 3 cs.; E. Fougera & Co., *Paris,* Havre, 49 cs.; Japan Paper Co., *Nora Maersk,* Kobe, 89 cs.; C. Bruning Co., *Hansa,* Hamburg, 1 cs.; Keuffel & Esser Co., *Hansa,* Hamburg, 13 rolls, 14 cs.

RAGS, BAGGINGS, ETC.

E. J. Keller Co., Inc., *Black Gull,* ———, 289 bls. rags; F. Stern, *Black Gull,* Rotterdam, 68 bls. rags; Philadelphia National Bank, *Black Gull,* Antwerp, 227 bls. rags; J. W. Heisley & Co., *Black Gull,* Antwerp, 93 bls. rags; Irving Trust Co., *Black Gull,* Antwerp, 93 bls. rags; D. M. Hicks, Inc., *Black Gull,* Antwerp, 21 bls. cotton waste; R. Blank, *Black Gull,* Antwerp, 193 bls. rags; Darmstadt Scott & Courtney, *Cold Harbor,* Manchester, 86 bls. rags; ———, *Cold Harbor,* Liverpool, 70 bls. bagging; E. J. Keller Co., Inc., *Carplaka,* ———, 58 bls. bagging; E. J. Keller Co., Inc., *Carplaka,* ———, 120 bls. rags; Manufacturers Trust Co., *American Farmer,* London, 58 bls. bagging; ———, *American Farmer,* London, 67 bls. paper stock; Amtorg Trading Corp., *F. Engels,* Odessa, 245 bls. rags Fleming Jaffe, Ltd., *F. Engels,* Odessa, 428 bls. rags;

Amtorg Trading Corp., *F. Engels,* Odessa, 1,425 bls. rags; G. A. Henshaw & Sons, *American Importer,* Manchester, 22 bls. rags; ———, *American Importer,* Manchester, 96 bls. paper stock; Philadelphia National Bank, *American Importer,* Manchester, 54 bls. paper stock; G. W. Millar & Co., Inc., *American Importer,* Liverpool, 38 bls. paper stock; E. J. Keller Co., Inc., *Executive,* ———, 265 bls. rags; Chase National Bank, *Executive,* Algiers, 73 bls. rags; ———, *Black Osprey,* Rotterdam, 113 bls. pickers; Loumar Textile By-Products Co., *Black Osprey,* Rotterdam, 173 bls. bagging; E. J. Keller Co., Inc., *Black Osprey,* ———, 147 bls. rags; E. J. Keller Co., Inc., *Black Osprey,* ———, 207 bls. bagging; Great Eastern Paperstock & Packing Co., *Pr. Garfield,* Bombay, 100 bls. rags; E. J. Keller Co., Inc., *Pr. Garfield,* ———, 150 bls. rags; ———, *Alaunia,* London, 95 bls. paper stock; J. Cohen Son, Inc., *Andania,* Liverpool, 9 bls. paper stock; ———, *Andania,* Liverpool, 39 bls. rags; S. Birkenstein & Son, *Flint II,* Barcelona, 178 bls. bagging; E. J. Keller Co., Inc., *Flint II,* ———, 197 bls. rags; ———, *Flint II,* Alicante, 20 bls. bagging; E. J. Keller Co., Inc., *Express,* ———, 199 bls. rags; J. J. Ryan Sons, Inc., *Nora Maersk,* Shanghai, 175 bls. cotton waste; O'Brien Padawer Co., *Nora Maersk,* Shanghai, 50 bls. cotton waste; New England Waste Co., *Nora Maersk,* Shanghai, 243 bls. cotton waste; W. R. Grace & Co., *Nora Maersk,* Shanghai, 200 bls. cotton waste; E. J. Keller Co., Inc., *Nora Maersk,* ———, 300 bls. bagging; Chase National Bank, *Nora Maersk,* Kobe, 400 bls. bagging; New England Waste Co., *Nora Maersk,* Kobe, 175 bls. cotton waste; F. Stern, *Estrella,* Marseilles, 166 bls. rags; E. J. Keller Co., Inc., *Estrella,* ———, 366 bls. rags; E. J. Keller Co., Inc., *Estrella,* ———, 159 bls. bagging; S. Shapiro & Sons, Inc., *Cliffwood,* Gdynia, 71 bls. rags; Darmstadt Scott & Courtney, *Beemsterdyk,* Rotterdam, 93 bls. rags; F. Stern, *Beemsterdyk,* Rotterdam, 132 bls. bagging; ———, *Beemsterdyk,* Rotterdam, 45 bls, rags; ———, *Beemsterdyk,* Rotterdam, 37 bls. bagging; Great Eastern Paperstock & Packing Co., *Beemsterdyk,* Rotterdam, 77 bls. bagging; Castle & Overton, Inc., *Uruguayo,* Buenos Ayres, 158 bls. dark cottons; Castle & Overton, Inc., *Uruguayo,* Buenos Ayres, 140 bls. bagging; Castle & Overton, Inc., *Uruguayo,* Buenos Ayres, 110 bls. hessian scrap; Guaranty Trust Co., *Hansa,* Hamburg, 148 bls. rags; New England Waste Co., *Hansa,* Bremen, 38 bls. pickers.

HIDE CUTTINGS

———, *J. Jadot,* Antwerp, 133 bls.

OLD ROPE

Manufacturers Trust Co., *American Farmer,* London, 90 coils; Irving Trust Co., *Black Osprey,* Rotterdam, 77 bls.; Manufacturers Trust Co., *Alaunia,* London, 69 bls.; G. W. Millar & Co., Inc., *Flint II,* Barcelona, 50 coils; ———, *Gitano,* Newcastle, 53 bls.

CASEIN

———, *Black Gull,* Antwerp, 50 bags; ———, *J. Jadot,* Antwerp, 713 bags; ———, *Paris,* Havre, 333 bags.

WOOD PULP

Gottesman & Co. Inc., *Soloy,* Gefle, 1,200 bls. sulphite; Pagel Horton & Co., Inc., *Soloy,* Gefle, 250 bls. sulphite; Pagel Horton & Co., Inc., *Soloy,* Gefle, 500 bls. sulphate; Stora Kopparberg Corp., *Soloy,* Gefle, 750 bls. wood pulp; Tradesmans National Bank Trust Co., *Soloy,* Gefle, 1,750 bls. sulphate; Bulkley Dunton & Co., *Soloy,* ———, 125 bls. sulphite; Price & Pierce, Ltd., *Svaneholm,* Stockholm, 150 bls. sulphite; Gottesman & Co., Inc., *Svaneholm,* Stockholm, 720 bls. sulphite; Castle & Overton, Inc., *Svaneholm,* Hango, 1,345 bls. sulphite; Lagerloef Trading Co., *Svaneholm,* Hango, 390 bls. mechanical pulp; Lagerloef Trading Co., *Svaneholm,* Hango, 2,524 bls. sulphate; Lagerloef Trading Co., *Svaneholm,* Hango, 3,727 bls. sulphite; Bulkley Dunton & Co., *Black Gull,* ———, 860 bls. wood pulp, 172 tons; Price & Pierce, Ltd., *Gripsholm,* Gothenburg, 500 bls. dry pulp; Bankers Trust Co., *Gripsholm,* Gothenburg, 298 bls. sulphate; Perkins Goodwin & Co., *Gripsholm,* Gothenburg, 650 bls. sulphate; Perkins Goodwin & Co., *Gripsholm,* Gothenburg, 1,270 bls. kraft pulp; Johaneson Wales & Sparre, Inc., *Gripsholm,* Gothenburg, 2 bls. sulphite; Johaneson Wales & Sparre, Inc., *Gripsholm,* Gothenburg, 748 bls. kraft pulp; Pulp Specialties, Inc., *Gripsholm,* Gothenburg, 12 bls. sulphate; ———, *Laura C,* Trieste, 770 bls. wood pulp; Lagerloef Trading Co., *Cliffwood,* Helsingfors, 3,048 bls. sulphite, 595 tons; ———, *Cliffwood,* Gdynia, 1,389 bls. wood pulp, 214 tons; N. Y. Trust Co., *Beemsterdyk,* Rotterdam, 231 bls. wood pulp; Irving Trust Co., *Bergensfjord,* Oslo, 150 bls. chemical pulp; The Borregaard Co., Inc., *Bergensfjord,* Sarpsborg, 168 bls. sulphate; N. Y. Trust Co., *Hansa,* Hamburg, 318 bls. wood pulp, 50 tons; F. D. Maxwell Corp., *Hansa,* Hamburg, 30 rolls wood pulp; Bulkley Dunton & Co., *Veendam,* ———, 226 bls. wood pulp.

WOOD PULP SHEETS

———, *Hansa,* Bremen, 70 bls.

WOOD PULP BOARDS

———, *Svaneholm,* Hango, 227 rolls; Jay Madden Corp., *Svaneholm,* Hango, 30 bls., 54 rolls; Fibre Case & Novelty Co., *Gripsholm,* Gothenburg, 32 bls.; Jay Madden Corp., *Cliffwood,* Helsingfors, 182 bls.

BOSTON IMPORTS

WEEK ENDING APRIL 11, 1936

———, *Laura C,* Trieste, 45 bags hide glue; G. F. Malcolm, Inc., *Andania,* Liverpool, 15 cs. tissue paper; ———, *Andania,* Liverpool, 780 bags hide cuttings; New England Waste Co., *Nora Maersk,* Shanghai, 64 bls. cotton waste; ———, *Nora Maersk,* Kobe, 167 bls. rags; ———, *Nora Maersk,* Kobe, 50 bls. rags; Bulkley Dunton & Co., *Vasaholm,* ———, 1,375 bls. wood pulp; Gottesman & Co., Inc., *Carplaka,* Sweden, 750 bls. wood pulp; Parsons & Whittemore, Inc., *McKeesport,* ———, 1,975 bls. wood pulp.

PHILADELPHIA IMPORTS

WEEK ENDING APRIL 11, 1936

Gottesman & Co., Inc., *Soloy,* Gefle, 7,086 bls. sulphate, 1,199 tons; Gottesman & Co., Inc., *Soloy,* Gefle, 2,500 bls. sulphite, 266 tons; Pagel Horton & Co., Inc., *Soloy,* Gefle, 1,165 bls. sulphate, 236 tons; Stora Kopparberg Corp., *Soloy,* Gefle, 1,870 bls. wood pulp, 379 tons; ———, *Soloy,* Gefle, 80 rolls newsprint; Perkins Goodwin & Co., *Soloy,* Gefle, 513 rolls newsprint; Jay Madden Corp., *Svaneholm,* Hango, 30 bls. pulp boards; Lagerloef Trading Co., *Svaneholm,* Hango, 5,164 bls. sulphite; Lagerloef Trading Co., *Svaneholm,* Hango, 130 bls. sulphate; Philadelphia Inquirer Co., *Svaneholm,* Hallstavik, 504 rolls newsprint; Paper Manufacturers Co., Inc., *Svaneholm,* Hango, 169 bls. newsprint; J. W. Hampton, Jr., Co., *Svaneholm,* Hango, 130 bls. newsprint; H. Reeve Angel & Co., Inc., *Svaneholm,* Hango, 72 rolls newsprint; E. W. Twitchell, Inc., *Svaneholm,* Hango, 34 rolls newsprint; ———, *Cold Harbor,* Glasgow, 66 coils old rope; ———, *Cold Harbor,* Liverpool, 129 bls. rags; Castle & Overton, Inc., *Black Osprey,* Rotterdam, 550 bls. wood pulp, 110 tons; National Vulcanized Fibre Co., *Black Osprey,* Rotterdam, 96 bls. rags; E. J. Keller Co., Inc., *Black Osprey,* ———, 209 bls. rags; F. Whitaker Co., *Black Osprey,* Antwerp, 168 bls. rags; Continental Bank Trust Co., *Black Osprey,* Antwerp, 601 bls. rags; ———, *Black Osprey,* Antwerp, 6 bls. wrapping paper; G. W. Millar &

(Continued on page 4.)

New York Market Review

Office of the PAPER TRADE JOURNAL,
Wednesday, April 15, 1936.

Trading in the local paper market is fairly persistent. Demand for the various standard grades of paper is brisk, in most instances. Operations at the paper mills damaged by the floods are approaching normal. Sales forces of the leading paper organizations are generally optimistic. Prices are steady to firm.

The newsprint paper market is quite active. Demand from the publishers is more insistent. Consumption during the current year is expected to be high and a record production is freely anticipated, in most quarters, to meet increased requirements. The price situation is considered more promising than for some time past.

Sentiment in the fine paper market is gradually improving. Deliveries of book paper are beginning to move freely with the passing of the floods. Cover and writing papers are in satisfactory request. Tissues are going forward in fairly heavy volume for the time of year. The coarse paper market is steady.

Mechanical Pulp

The ground wood pulp market is exhibiting a fairly strong undertone. Manufacturing operations in the United States, Canada and abroad are proceeding in sufficient volume to take care of current requirements. Accumulations at the mills are not excessive. Prices are holding to previously quoted levels.

Chemical Pulp

Steadiness prevails in the chemical pulp market. There are numerous inquiries around for bleached sulphite and kraft pulps. Offerings are decidedly limited, however, with the result that quotations are firm. Unbleached sulphite pulp is moderately active. Bleached soda pulp is steady, with prices holding to schedule.

Old Rope and Bagging

The position of the old rope market is practically unchanged. Some improvement, however, is noticed in the demand for imported old manila rope. Mixed strings are moving in good volume. Old rope quotations are steady. The bagging market is rather quiet at present. Scrap and gunny bagging are only moderately active.

Rags

Paper mill interest in the domestic rag market is less in evidence than of late. New cotton rags are softer. Demand for No. 1 shirt cuttings has quieted down somewhat. Roofing grades, also, are listless for the time being. No radical changes have transpired in the imported rag market. Quotations are nominal.

Waste Paper

The paper stock market is fairly active. Board mill demand for the lower grades of waste paper is improving slightly. Quotations on No. 1 mixed paper and strictly folded news remain unchanged. The higher grades of paper stock continue steady, especially hard white envelope cuttings and hard and soft white shavings.

Twine

Now that the Easter rush of orders is over, demand for the various varieties of twine is becoming more routine. However, the twine market is considered in a strong position and the outlook for the future is promising. Despite the usual keen competition for desirable orders, prices are generally well maintained.

IMPORTS OF PAPER AND PAPER STOCK

(Continued from page 46)

Co., Inc., *Black Osprey,* Antwerp, 106 bls. rags; American Sanitary Rag Co., *Black Osprey,* Antwerp, 70 bls. rags; The Lang Co., *Black Osprey,* Antwerp, 115 bls. rags; ———, *Black Osprey,* Antwerp, 179 bls. rags; E. J. Keller Co., Inc., *Flint II,* ———, 74 bls. rags; Chase National Bank, *Nora Maersk,* Kobe, 801 bls. rags; E. J. Keller Co., Inc., *Estrella,* ———, 111 bls. paper stock; Jay Madden Corp., *Cliffwood,* Helsingfors, 166 bls., 47 rolls pulp boards; J. W. Hampton, Jr. Co., *Cliffwood,* Helsingfors, 394 rolls newsprint; H. Reeve Angel & Co., Inc., *Cliffwood,* Helsingfors, 137 rolls newsprint; Lagerloef Trading Co., *Cliffwood,* Helsingfors, 3,048 bls. sulphite, 595 tons; Lagerloef Trading Co., *Cliffwood,* Helsingfors, 787 rolls wood pulp boards; Lagerloef Trading Co., *Cliffwood,* Helsingfors, 130 bls. sulphate, 26 tons; Jay Madden Corp., *Cliffwood,* Helsingfors, 187 rolls newsprint; E. J. Keller Co., Inc., *Beemsterdyk,* ———, 44 bls. rags; Castle & Overton, Inc., *Uruguayo,* Buenos Ayres, 115 bls. dark cottons; Castle & Overton, Inc., *Uruguayo,* Buenos Ayres, 75 bls. paper stock.

WILMINGTON IMPORTS

WEEK ENDING APRIL 11, 1936

Lagerloef Trading Co., *Cliffwood,* Helsingfors, 3,724 bls. sulphite, 744 tons; E. J. Keller Co., Inc., *Cliffwood,* ———, 1,342 bls. wood pulp, 202 tons.

BALTIMORE IMPORTS

WEEK ENDING APRIL 11, 1936

Pagel Horton & Co., Inc., *Soloy,* Gefle, 1,750 bls. sulphate, 355 tons; Pagel Horton & Co., Inc., *Soloy,* Gefle, 6,000 bls. sulphite, 619 tons; Stora Kopparberg Corp; *Soloy,* Gefle, 2,085 bls. wood pulp, 423 tons; Gottesman & Co., Inc., *Soloy,* Gefle, 1,500 bls. sulphite 304 tons; ———, *Soloy,* Gefle, 750 bls. sulphite, 152 tons; Bank of N. Y. Trust Co., *Soloy,* Gefle, 1,800 bls. kraft pulp, 304 tons; Central Hanover Bank Trust Co., *Soloy,* Gefle, 2,550 bls. sulphite, 431 tons; J. Andersen & Co., *Soloy,* Gefle, 1,200 bls. sulphite, 203 tons; Congoleum Nairn Co., *Executive,* Marseilles, 112 bls. rags; ———, *Laura C,* Trieste, 770 bls. wood pulp; Congoleum Nairn Co., *Black Osprey,* Antwerp, 2,380 bls. rags; ———, *Nora Maersk,* Kobe, 189 bls. rags; Gottesman & Co., Inc., *Minnequa,* Finland, 250 bls. wood pulp; Parsons & Whittemore, Inc., *City of Norfolk,* ———, 1,315 bls. wood pulp.

Miscellaneous Markets

Office of the PAPER TRADE JOURNAL.
Wednesday, April 15, 1936.

BLANC FIXE.—Conditions in the blanc fixe market are farily satisfactory. Prices are holding to schedule, without difficulty. The pulp is quoted at $42.50 to $45 per ton, in bulk; while the powder is selling at 3½ to 3¾ cents per pound, in barrels, at works.

BLEACHING POWDER.—The position of the bleaching powder market is practically unchanged. Shipments against contract are now moving regularly. Prices are generally well maintained. Bleaching powder is quoted at $2 to $2.25 per 100 pounds, in drums, at works.

CASEIN.—The casein market is steady. Domestic standard ground is quoted at 15 and finely ground at 15½ cents per pound. Argentine and French standard ground are selling at 14 and finely ground at 14½ cents per pound, all in bags, car lot quantities.

CAUSTIC SODA.—Steadiness prevails in the caustic soda market. Demand from the paper mills is fairly active. Solid caustic soda is still quoted at $2.55 to $2.60; while the flake and ground are selling at $2.95 to $3 per 100 pounds, in drums, at works.

CHINA CLAY.—The china clay market is exhibiting a strong undertone. Contract shipments are moving freely. Prices remain unchanged. Imported china clay is quoted at $13.50 to $21 per ton, ship side; while domestic paper making clay is selling at $6.50 to $12 per ton.

CHLORINE.—Business in the chlorine market is fairly brisk. The contract movement is well up to average for the time of year. Prices are holding to formerly quoted levels. Chlorine is selling at $2.15 to $2.55 per 100 pounds, in tank cars, at works.

ROSIN.—The rosin market is firmer. Paper making gum rosin is now quoted at $4.45 and wood rosin at $4.25 per 280 pounds, gross weight, in barrels, at Savannah. Seventy per cent rosin size is selling at $2.58½ per 100 pounds, in tank cars, at works.

SALT CAKE.—Paper mill demand for salt cake is well sustained. Contract shipments are moving in good volume. Salt cake is quoted at $12 to $13; chrome salt cake at $11 to $12 per ton, at works. Imported salt cake is selling at $12 to $13 per ton, ship side.

SODA ASH.—The soda ash market is displaying strength. Demand from the paper mills is satisfactory. Prices remain unchanged. Quotations on soda ash, in car lots, at works, per 100 pounds, are as follows: in bulk, $1.05; in bags, $1.20; and in barrels, $1.50.

STARCH.—Most of the business transacted in the starch market by the paper mills during the past week was along routine lines. Special paper making starch is quoted at $3.10 per 100 pounds, in bags; and at $3.37 per 100 pounds, in barrels, at works.

SULPHATE OF ALUMINA.—The sulphate of alumina market is fairly buoyant. Demand from the paper mills is well sustained. Prices remain unchanged. Commercial grades are quoted at $1.35 to $1.60 and iron free at $2 to $2.25 per 100 pounds, in bags, at works.

SULPHUR.—The sulphur market is steady. Yearly contracts are quoted at $18 per ton, in bulk, on orders of 1,000 tons, or over and $20 on smaller quantity. On spot and nearby carloads the quotation is $21 per ton. All quotations are in car lots, at works.

TALC.—No radical changes transpired in the talc market. The contract movement is normal. Prices are holding to schedule. Domestic talc is quoted at $16 to $18 per ton, at eastern mines; while imported talc is selling at $23 to $30 per ton, on dock.

Market Quotations

Paper

Rag Content Bond & Ledgers— Delivered Zone 1	Bonds	Ledgers
100% Rag Ext. No. 1	.36	.37
100% Rag	.28	.29
75% Rag	.21	.22
65% Rag	.18	.19
50% Rag	.15	.16
25% Rag	.12½	.13½

Sulphite Bond & Ledgers— Delivered Zone 1	Bonds	Ledgers
No. 1 Sulphite	7.75	8.75
No. 2 Sulphite	6.75	7.75
No. 3 Sulphite	6.00	7.00
No. 4 Sulphite	5.50	6.50

Book, Cased—		
S. & S. C.	5.35 @	5.75
S. & S. C. Litho.	5.60 @	6.00
M. F.	5.10 @	5.50
Coated and Enamel	5.90 @	6.55
Coated Litho	5.90 @	6.55

Tissues—Per Ream—		
White No. 1	.82½ @	—
White No. 1 M. G.	.77½ @	—
White No. 1½	.62½ @	—
White No. 2	.60 @	—
Anti-Tarnish M. G.	.67½ @	—
Colored	.80 @	—
Kraft	.67½ @	—
Manila	.60 @	—
Unbleached Toilet	2.60 @	3.30
Bleached Toilet	3.94 @	5.26

Paper Towels—		
Unbleached	2.10 @	3.35
Bleached	3.30 @	3.70

Manila—		
No. 1 Jute	9.00 @	9.25
No. 2 Jute	7.75 @	8.50
No. 1 Wood	4.00 @	5.25
No. 2 Wood	3.50 @	4.00

Fibre Papers—		
No. 1 Fibre	4.25 @	5.50
No. 2 Fibre	4.00 @	4.75

(Delivered New York)

News, per ton—		
Roll, contract	41.00 @	—
Sheets	46.00 @	—

Kraft—		
No. 1 Northern	4.12½ @	4.75
Standard	4.00 @	—
Southern	3.87½ @	—

Boards—per ton—		
News	32.50	@35.00
Chip	32.50	@35.00
Sgl. Mla. Ll. Chip	45.00	@47.50
Jute Lined Chip	42.50	@45.00
Kraft Liners	60.00	@62.50
White Pat. Coated	55.00	@57.50
Binders Boards	67.00	@75.00

Mechanical Pulp

(On Dock, Atlantic Ports)

No. 1 Imported—		
Moist	23.00	@24.00
Dry	23.00	@24.00

(F. o. b. Mill)

No. 1 Domestic and Canadian	18.00	@24.00

Chemical Pulp

(On Dock, Atlantic, Gulf and West Coast Ports)

Bleached Sulphite (Domestic and Foreign)—		
Division 1	2.60 @	2.90
Division 2	2.55 @	—*
Division 3	2.50 @	—*

Prime Qualities—		
Class 1. All Prime Easy Bleaching	2.05 @	—*

Other Than Easy Bleaching—		
Class 2. Higher than Standard	2.00 @	—*
Class 3, Standard	1.95 @	—*
Class 4, Lower than Standard	1.90 @	—*

(On Dock, Atlantic Ports)

Kraft No. 1	1.85 @	1.95
Kraft No. 2	1.70 @	1.80

(F. o. b. Pulp Mill)

Kraft Domestic	1.80 @	1.90

(Delivered)

Soda Bleached	2.60 @	—

* Add 60 Cents per short ton, dock charges, for Albany; $2.00 for Lake Ports East and $3.00 for Lake Ports West of Mackinac Straits.

Domestic Rags

New Rags

(Prices to Mill f. o. b. N. Y.)

Shirt Cuttings—		
New White, No. 1	8.00 @	8.15
Silesias No. 1	5.50 @	5.75
New Unbleached	8.25 @	8.50
New Soft Blacks	3.75 @	4.00
Blue Overall	5.75 @	6.00
Fancy	3.25 @	3.50
Washables	2.25 @	2.50
Mixed Khaki Cuttings	3.50 @	3.75
O. D. Khaki Cuttings	4.25 @	4.50
Men's Corduroy	2.00 @	2.25
New Mixed Blacks	2.75 @	3.00

Old Rags

White, No. 1—		
Repacked	3.00 @	3.50
Miscellaneous	2.75 @	3.25
White, No. 2—		
Repacked	1.75 @	2.25
Miscellaneous	1.50 @	1.75
Thirds and Blues—		
Repacked	1.75 @	1.85
Miscellaneous	1.45 @	1.55
Roofing Rags—		
No. 1	2.00 @	2.10
No. 2	1.70 @	1.80
No. 3 (bagging)	1.60 @	1.70
No. 4	1.60 @	1.70
No. 5A	1.00 @	1.10

Foreign Rags

New Rags

New Dark Cuttings	2.00 @	2.25
New Mixed Cuttings	1.80 @	1.90
New Light Silesias	3.75 @	4.00
Light Flannelettes	4.25 @	4.50
New White Cuttings	6.50 @	7.00
New Light Oxfords	3.25 @	3.50
New Light Prints	2.75 @	3.00

Old Rags

No. 1 White Linens	7.50 @	8.00
No. 2 White Linens	6.50 @	7.00
No. 3 White Linens	4.50 @	5.00
No. 4 White Linens	2.25 @	2.50
No. 1 White Cotton	4.25 @	4.75
No. 2 White Cotton	3.25 @	3.75
No. 3 White Cotton	2.50 @	2.75
No. 4 White Cotton	1.90 @	2.15
Extra Light Prints	2.00 @	2.25
Ord. Light Prints	1.75 @	1.85
Med. Light Prints	1.55 @	1.65
Dutch Blue Cottons	2.00 @	2.25
French Blue Linens	2.30 @	2.40
German Blue Linens	2.15 @	2.25
German Blue Cottons	1.70 @	1.80
Checks and Blues	1.70 @	1.80
Linsey Garments	2.50 @	2.60
Dark Cottons	2.00 @	2.35
Old Shopperies	1.00 @	1.05
New Shopperies	1.25 @	1.35
French Blues	2.00 @	2.25

Old Rope and Bagging

(Prices to Mill f. o. b. N. Y.)

Gunny No. 1—		
Foreign	2.20 @	2.25
Domestic	2.25 @	2.35
Wool Tares, light	1.75 @	2.00
Wool Tares, heavy	2.25 @	2.35
Bright Bagging	1.75 @	1.80
Manila Rope—		
Foreign	2.40 @	2.50
Domestic	2.25 @	2.35
Mixed Strings	1.00 @	1.05
New Burlap Cut	2.00 @	2.25
Hessian Jute Threads—		
Foreign	2.60 @	2.75
Domestic	2.80 @	3.00

Old Waste Papers

(F. o. b. New York)

Shavings—		
White Envelope Cuttings	2.65 @	2.75
Ordinary Hard White No. 1	2.25 @	2.35
Hard White No. 2	2.10 @	2.20
Soft White No. 1	2.05 @	2.15
Flat Stock—		
Stitchless	.65 @	.75
Over issue Mag	.65 @	.75
Solid Flat Book	.55 @	.60
Crumpled No. 1	.35 @	.40
Solid Book Ledger	1.50 @	1.65
Ledger Stock	.85 @	.90
New B. B. Chips	.30 @	.35
Manilas—		
New Env. Cut	1.75 @	1.85
New Cuttings	1.35 @	1.45
Bogus Wrapper	.40 @	.50
Old Kraft Machine—		
Compressed bales	1.25 @	1.35
News—		
No. 1 White News	1.45 @	1.50
Strictly Overissue	.50 @	.55
Strictly Folded	.35 @	.40
No. 1 Mixed Paper	.27½ @	.32½

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Twines

(F. o. b. Mill)

(Soft Fibre)

Coarse Polished—			
India	.13¼	@	.15¾
Belg. White Hemp	.14¼	@	.17¾
India Compress	.13¾	@	.14¼
Fine Polished—			
Fine India	.21½	@	.23½
Special	.19½	@	.21½
Unpolished—			
Box	.12	@	.12½
Paper Makers	.09	@	.13½
Tube Rope	.10	@	.15½
Wall Paper	.11	@	.14½
Wrapping	.15½	@	.21
Special	.15	@	.15½
Soft Fiber Rope	.12½	@	.12¾
(Hard Fibre)			
Bond	.12	@	.20½
Anchor	.11½	@	.13
Manila	.21	@	.2[illegible]

CHICAGO

Paper

(F. o. b. Mill)

Rag Bond	.12	@	.40
Water Marked Sulphite Bond	.06¾	@	.11
Sulphite Bond	.05½	@	.07¼
Superfine Writing	.18	@	.24
No. 1 M. F. Book	.06½	@	.07¼
No. 2 M. F. Book	.05¼	@	.06¼
No. 1 S.&S.C. Book	.06¾	@	.07¾
No. 2 S.&S.C. Book	.05¾	@	.06½
Coated Book	.07	@	.12
Coated Label	.07	@	.08½
No. 1 Manila	.04¼	@	.05¾
No. 1 Fibre	.04¾	@	.05¾
No. 2 Manila	.04¼	@	.04¾
Butcher's Manila	.03¼	@	.03¾
No. 1 Kraft	4.75	@	5.00
Southern Kraft	3.88	@	4.25
No. 2 Kraft	3.88	@	4.2[illegible]
Wood Tag Boards	.04¼	@	.06¼
Sulphite Screenings	.03	@	.03¼
Manila Tissue	.05¾	@	.07
White Tissue	.07	@	.09

(Delivered Central Territory)

News, per ton—			
Rolls, contract	42.00	@	—
Sheets, open	47.00	@	—
Boards, per ton—			
Plain Chip	46.50	@	—
Solid News	50.00	@	—
Manila Lined Chip	55.00	@	—
Patent Coated	65.00	@	—
Container Lined—			
85 Test, per 1000 sq. ft.			1.70
100 Test, per 1000 sq. ft.			1.85

Old Papers

(F. o. b. Chicago)

Shavings—			
No. 1 White Envelope Cuttings	1.70	@	2.00
No. 1 Hard White	1.40	@	1.65
No. 1 Soft White	1.25	@	1.50
Ledger & Writings	.70	@	.80
Solid Books	.60	@	.70
Blanks	1.00	@	1.05
Krafts	.80	@	.90
New Kraft Cuts	1.20	@	1.30
Manila Env. Cuts	1.25	@	1.30
Ex. No. 1 Manila	.90	@	1.00
Print Manila	.40	@	.50
Overissue News	.40	@	.45
Old Newspapers—			
No. 1	.30	@	.35
No. 1 Mixed Paper	.25	@	.30
Roofing Stocks—			
No. 1	30.00	@	—
No. 2	28.00	@	—

PHILADELPHIA

Paper

Rag Content Bond & Ledgers—
Delivered Zone 1

	Bonds	Ledgers
100% Rag Ext. No. 1	.36	.37
100% Rag	.28	.29
75% Rag	.21	.22
65% Rag	.18	.19
50% Rag	.15	.16
25% Rag	.12½	.13½

Sulphite Bond & Ledgers—
Delivered Zone 1

	Bonds	Ledgers
No. 1 Sulphite	7.75	8.75
No. 2 Sulphite	6.75	7.75
No. 3 Sulphite	6.00	7.00
No. 4 Sulphite	5.50	6.50

F.o.b. Mill

Book, M. F.	5.00	@	—
Book, S. S. & C.	5.25	@	—
Book, Coated	6.15	@	—
Coated Lithograph	6.15	@	—
No. 1 Jute Manila	10.50	@	—
Manila Sul., No. 1	6.75	@	—
Manila No. 2	4.25	@	—
No. 1 Kraft	6.00	@	—
Southern Kraft	5.00	@	—
News Print Rolls	40.00	@	—
Straw Board	40.00	@	45.00
News Board	40.00	@	—
Chip Board	37.50	@	—
Wood Pulp Board	70.00	@	85.00
Binder Boards—			
No. 1, per ton	75.00	@	80.00
No. 2, per ton	70.00	@	75.00
Carload lots	65.00	@	70.00
Tarred Felts—			
Regular	52.25	@	54.25
Slaters (per roll)	.84	@	.94

Domestic Rags (New)

(Price to Mill, f. o. b. Phila.)

Shirt Cuttings—			
New White, No. 1.	.09	@	.09½
New White, No. 2.	.05½	@	.06
Light Silesias	.05½	@	.06½
Silesias, No. 1	.04½	@	.05
Black Silesias, soft	.03½	@	.04
New Unbleached	.06½	@	—
Washable, No. 1	.02	@	.02½
Blue Overall	.06	@	.06½
Cottons—According to grades—			
Washable, No. 2	.02½	@	.04½
New Blue	.02	@	.02½
Fancy	.03	@	—
New Black Soft	.04¼	@	.04¾
New Light Seconds	.04	@	.04¼
New Dark Seconds	2.00	@	—
Khaki Cuttings—			
No. 1 O. D.	.04½	@	.05
No. 2 Mixed	.03½	@	.04½
Corduroy	.02¼	@	.02½
New Canvas	.04½	@	.05
New Black Mixed.	.02¼	@	.02½

Domestic Rags (Old)

White No. 1—			
Repacked	4.00	@	4.50
Miscellaneous	3.00	@	3.50
Thirds and Blues—			
Miscellaneous	2.00	@	2.25
Repacked	2.50	@	2.75
Black Stockings (Export)	4.50	@	5.00
Roofing Stock—			
Foreign No. 1	2.35	@	—
Domestic No. 1	1.80	@	1.85
Domestic No. 2	1.60	@	1.65
Roofing bagging	1.45	@	—

Bagging

(F. o. b. Phila.)

Gunny, No. 1—			
Foreign	2.00	@	—
Domestic	2.25	@	—
Manila Rope	2.75	@	3.00
Sisal Rope	1.75	@	2.00
Mixed Rope	1.00	@	1.10
Scrap Burlaps—			
No. 1	2.00	@	2.50
No. 2	.90	@	1.00
Wool Tares, heavy	3.00	@	3.25
Mixed Strings	1.00	@	1.10
No. 1 New Light Burlap	3.00	@	3.50
New Burlap Cuttings	2.50	@	2.75

Old Papers

(F. o. b. Phila.)

Shavings—			
No. 1 Hard White	2.30	@	2.40
No. 2 Hard White	2.10	@	2.20
No. 1 Soft White	1.80	@	1.85
No. 2 Soft White	1.40	@	1.45
No. 1 Mixed	—	@	.85
Solid Ledger Stock	1.50	@	1.60
Ledger Stock, white	1.15	@	1.20
Ledger Stock, colored	.85	@	.90
No. 1 Books, heavy	.65	@	.70
Manila Cuttings	1.50	@	1.60
Print Manila	.50	@	.60
Container Manila	.50	@	.60
Kraft Paper	1.10	@	1.20
No. 1 Mixed Paper	.35	@	.40
Straw Board Chip	.40	@	—
Binders Board Chip.	.40	@	—
Corrugated Board	.60	@	.65
Overissue News	.60	@	—
Old Newspapers	.40	@	—

BOSTON

Paper

Rag Content Bond & Ledgers—
Delivered Zone 1

	Bonds	Ledgers
100% Rag Ext. No. 1	.36	.37
100% Rag	.28	.29
75% Rag	.21	.22
65% Rag	.18	.19
50% Rag	.15	.16
25% Rag	.12½	.13½

Sulphite Bond & Ledgers—
Delivered Zone 1

	Bonds	Ledgers
No. 1 Sulphite	7.75	8.75
No. 2 Sulphite	6.75	7.75
No. 3 Sulphite	6.00	7.00
No. 4 Sulphite	5.50	6.50

F.o.b. Mill

Book, Super	.06	@	.09
Book, M. F.	.05½	@	.08½
Book, Coated	.08½	@	.18
Coated Litho	.09	@	.12
Jute Manila No. 1	.11	@	.13
Manila, Sul. No. 1	.04¾	@	.06½
Manila, Sul. No. 2	.03¾	@	.04½
No. 1 Kraft	.04½	@	.05
No. 2 Kraft	.04	@	.04¼

(Delivered New England points)

Southern Kraft	.03¾	@	—
News Print Rolls	39.50	@	—
Straw Board, rolls.009	—	@	35.00
Filled News Board	40.00	@	45.00
Chip Board	37.50	@	40.00
Single Manila Lined Chip	47.50	@	52.50
Single White, Patent Coated News Board (Bender)	55.00	@	65.00
Wood Pulp Board	70.00	@	75.00
Binder Boards (Standard Grade)	67.00	@	75.00

Old Papers

(F. o. b. Boston)

Shavings—			
No. 1 Hard White	2.00	@	2.20
No. 1 Soft White	1.75	@	1.90
No. 2 Mixed	.75	@	.80
Solid Ledger Books	1.50	@	1.75
Overissue Ledger Stock	1.15	@	1.30
Mixed Ledgers	.85	@	.90
No. 1 Books, heavy	.60	@	.70
No. 1 Books, light	.50	@	.60
Crumpled Stitchless Book Stock	.50	@	.60
Manila Env. Cuttings	1.50	@	1.60
No. 1 Old Manila	.60	@	.65
White Blank News	1.30	@	1.35
No. 1 Kraft	1.15	@	1.20
Mixed Papers	.22½	@	.25
Print Manila	.47½	@	.50
Container Manilas	.27½	@	—
Old Newspapers	.27½	@	.32½
Overissue News	—	@	.40
Box Board Chips	—	@	.25
Corrugated Boxes	.40	@	.45
Kraft corrugated boxes	.95	@	1.00
Screening Wrappers	.40	@	.45

Bagging

(F. o. b. Boston)

Manila Rope—			
Foreign	2.25	@	2.35
Domestic	2.25	@	2.35
Transmission Rope	1.30	@	1.40
Jute Rope	2.00	@	2.25
Jute Carpet Threads	1.00	@	1.10
Gunny No. 1—			
Foreign	2.05	@	2.15
Domestic	1.90	@	2.00
Bleachery Burlap	4.50	@	5.00
Scrap Burlap—			
Foreign	2.10	@	2.15
Domestic	1.75	@	1.90
Scrap Sisal	2.00	@	2.25
Scrap Sisal for Shredding	2.25	@	2.50
Wool Tares, heavy	2.25	@	2.35
New Burlap Cuttings	2.25	@	2.35
Australian Wool Pouches	2.75	@	2.85
Heavy Baling Bagging	2.00	@	2.25
Paper Mill Bagging	1.75	@	2.00
Bagging No. 2	1.25	@	1.50

Domestic Rags (New)

(F. o. b. Boston)

Shirt Cuttings—			
New Light Prints	.01¾	@	.02
New White No. 1	.08	@	.08¼
New White No. 2	.04	@	.04¼
Silesias No. 1	.05½	@	.06
New Black Silesias	.03½	@	.04¼
Soft Unbleached	.07¼	@	.07¾
Blue Cheviot	5.25	@	5.50
Fancy	.02½	@	.02¾
Washable	.0165	@	.0170
Cottons—According to grades—			
Blue Overalls	5.50	@	6.00
New Black, soft	.04	@	.04¼
Khaki Cuttings	.04	@	.04½
O. D. Khaki	.03¾	@	.04¼
Corduroy	.01¾	@	.02
New Canvas	—	@	.05
B.V.D. Cuttings	—	@	.06¼

Domestic Rags (Old)

(F. o. b. Boston)

Canvas	.04½	@	—
White No. 1—			
Repacked	—	@	2.75
Miscellaneous	2.50	@	2.75
White No. 2—			
Repacked	1.90	@	2.00
Miscellaneous	2.00	@	2.25
Twos and Blues	1.75	@	2.25
Thirds and Blues—			
Repacked	1.37½	@	1.75
Miscellaneous	1.25	@	1.62½
Black Stockings	3.90	@	4.00
Roofing Stock—			
No. 1	1.90	@	2.00
No. 2	1.60	@	1.70
No. 3	1.50	@	1.60

Foreign Rags

(F. o. b. Boston)

Dark Cottons	1.75	@	1.85
New White Shirt Cuttings	6.50	@	6.75
Dutch Blues	2.25	@	2.50
New Checks & Blues	2.50	@	3.00
Old Fustians	1.90	@	2.00
Old Linsey Garments	2.00	@	2.10
New Silesias	4.75	@	5.25

TORONTO

Paper

(F. o. b. Mill)

Bond—			
No. 1 Sulphite	.11	@	—
No. 2 Sulphite	.08½	@	—
No. 1 Colored	.12	@	—
No. 2 Colored	.09	@	—
Ledgers			
Ledgers, No. 1	.34½	@	—
Ledgers, No. 2	.25½	@	—
Writing	.09	@	.09½
Book—			
No. 1 M. F. (Carloads)	6.50	@	—
No. 2 M. F. (Carloads)	6.00	@	—
No. 3 M. F. (Carloads)	6.00	@	—
No. 1 S. C. (Carloads)	7.00	@	—
No. 2 S. C. (Carloads)	6.50	@	—
No. 3 S. C. (Carloads)	6.50	@	—
No. 1 Coated and Litho	12.00	@	—
No. 2 Coated and Litho	10.50	@	—
No. 3 Coated and Litho	9.50	@	—
Coated tinted	13.00	@	—
Wrapping—delivered—			
Rag Brown	4.75	@	—
White Wrap	3.50	@	—
"B" Manila	4.80	@	—
No. 1 Manila	5.40	@	—
Fiber	5.40	@	—
Kraft, M. F.	5.90	@	—
Kraft, No. 2	5.40	@	—

(F. o. b. Cars Toronto)

News, per ton—			
Rolls (contract)	40.50	@	—
Sheets	45.00	@	—

Pulp

Ground wood	27.00	@	—
Unbleached Sulphite	42.00	@	—
Book (Class 1)	58.00	@	—
Writing (Class 2)	59.00	@	—
Select (Class 3)	60.00	@	—

Old Waste Paper

(In carload lots, f. o. b. Toronto)

Shavings—			
White Env. Cut	2.00	@	2.25
Soft White	1.60	@	1.90
White Blk. News	1.25	@	1.40
Book and Ledger—			
Flat Magazine and Book Stock (old)	.90	@	1.00
Light and Crumpled Book Stock	.80	@	.90
Ledgers and Writings	1.00	@	1.05
Manilas—			
New Manila Cut	1.25	@	1.40
Printed Manilas	.50	@	—
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PAPER TRADE JOURNAL

ESTABLISHED 1872

SIXTY-FOURTH YEAR

THE INTERNATIONAL WEEKLY OF THE PAPER AND PULP INDUSTRY AND THE PIONEER PUBLICATION IN ITS FIELD

Published Every Thursday by the LOCKWOOD TRADE JOURNAL CO., Inc.

GEO. S. MACDONALD, President — JOSEPH P. HORGAN, Secretary

Published at 34 No. Crystal St., East Stroudsburg, Pa.
Executive and Editorial Offices: 15 West 47th Street, New York
Chicago Office: 123 West Madison St.

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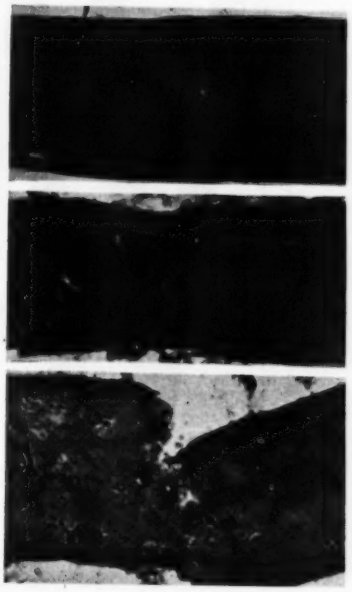

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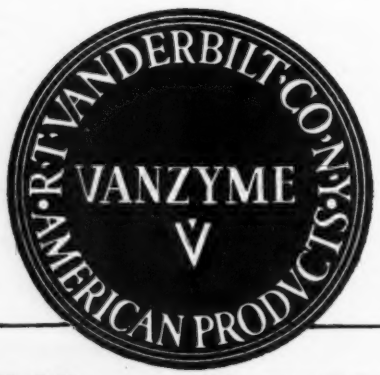

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